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PART VI

ENVIRONMENTAL PROTECTION AGENCY

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PESTICIDE PROGRAMS

Rebuttable Presumption Against Registration and Continued Registration of Pesticide Products Containing Ethylenebisdithiocarbamates

ENVIRONMENTAL PROTECTION AGENCY

[FRL 772-7; OPP-30000/18]

PESTICIDE PROGRAMS

Rebuttable Presumption Against Registration and Continued Registration of Pesticide Products Containing Ethylenebisdithiocarbamates

The Deputy Assistant Administrator, Office of Pesticide Programs, Environmental Protection Agency (EPA), has determined that a rebuttable presumption exists against registration and continued registration of all pesticide products containing ethylenebisdithiocarbamates (EBDC's).[1]

I. Regulatory Provisions

A. *General.* Title 40, Part 162.11, of the Code of Federal Regulations for the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended (86 Stat. 971, 89 Stat. 751, 7 U.S.C. 136 et seq.), provides that a rebuttable presumption against registration shall arise if the Agency determines that a pesticide meets or exceeds any of the risk criteria relating to acute and chronic toxic effects set forth in § 162.11(a)(3). If it is determined that such a rebuttable presumption has arisen, the regulations require that the registrant be notified by certified mail and afforded an opportunity to submit evidence in rebuttal of the presumption. In addition, the Agency has determined that the public should also be given notice of the bases for the presumption to provide an opportunity for comment and to solicit additional information relevant to the presumption.

A notice of rebuttable presumption against registration is issued when the evidence related to risk meets the criteria set forth in § 162.11(a)(3). It is emphasized that notice of rebuttable presumption against registration and continued registration of a pesticide is not a notice of intent to cancel the registration of a pesticide, and may or may not lead to cancellation. The notice of intent to cancel is issued only after the risks and benefits of a pesticide are carefully considered and it is determined that the pesticide may generally cause unreasonable adverse effects to the environment.

Accordingly, all registrants and applicants for registration are invited pursuant to 40 CFR 162.11(a)(4) to submit evidence in rebuttal of the presumptions listed in Part II of this notice and, in the case of oncogenicity, to submit information which relates to the assessment of oncogenic risks as set forth in the Agency's Interim Procedures and Guidelines for Health Risk and Economic Impact Assessment of Suspected Carcinogens (May 25, 1976; 41 FR 21402). Registrants and other interested parties may also submit for consideration data on benefits which they believe would justify registration or continued registration. In addition, any registrant may petition the Agency to voluntarily cancel a current registration pursuant to Section 6(a)(1) of FIFRA.

B. *Rebuttal criteria.* Section 162.11(a)(4) provides that a registrant may rebut the presumption by sustaining the burden of proving:

(1) In the case of a pesticide presumed against pursuant to the acute toxicity or lack of emergency treatment criteria, "that when considered with the formulation, packaging, method of use, and proposed restrictions on and directions for use and widespread and commonly recognized practices of use, the anticipated exposure to an applicator or user and to local, regional, or national populations of nontarget organisms is not likely to result in any significant acute adverse effects" (40 CFR 162.11(a)(3)(i) and (iii));

(2) In the case of a pesticide presumed against pursuant to the chronic toxicity criteria, "that when considered with proposed restrictions on use and widespread and commonly recognized practices of use, the pesticide will not concentrate, persist, or accrue to levels in man or the environment likely to result in any significant chronic adverse effects" (40 CFR 162.11(a)(3)(ii); or

(3) In either case, that "the determination by the Agency that the pesticide meets or exceeds any of the criteria for risk was in error."

C. *Benefits information.* In addition to submitting evidence to rebut the presumption of risk, § 162.11(a)(5)(iii) provides that a registrant "may submit evidence as to whether the economic, social, and environmental benefits of the use of the pesticide subject to the presumption outweigh the risk of use." If the risk presumptions are not rebutted, the benefit evidence submitted by the registrant,[2] applicants, and other interested persons will be considered by the Administrator in determining the appropriate regulatory action. Specifically, § 162.11(a)(5)(iii) provides that if the "benefits appear to outweigh the risks," the Administrator may issue a notice of intent to hold a hearing pursuant to Section 6(b)(2) of FIFRA rather than a notice of intent to cancel or deny registration pursuant to Section 3(c)(6) of FIFRA. Alternatively, if the "benefits do not appear to outweigh the risks, the Administrator shall issue a notice pursuant to Section 3(c)(6) or Section 6(b)(1) of the Act, as appropriate." Moreover, if at any time the Administrator determines that a pesticide poses an "imminent hazard" to humans or the environment, a notice of suspension may be issued pursuant to Section 6(c) of the Act.

Stated below are the § 162.11(a)(3) risk criteria which the Agency has found to have been met or exceeded by registrations and applications for registration of pesticide products containing EBDC's. The Agency's basis for concluding that these risk criteria have been met or exceeded is set out in "Ethylenebisdithiocarbamates: Position Document 1," which follows. Copies of attachments to the Position Document which are not published with this notice are available for public inspection in the Office of Special Pesticide Reviews. Information protected from disclosure pursuant to FIFRA Section 10 cannot be provide. Specific inquiries concerning the Position Document, as well as requests for access to these files, should be directed to Project Manager Dr. Nancy Beach, Office of Special Pesticide Reviews (WH-566), EPA, Rm. 447, East Tower, 401 M St. SW., Washington, D.C. 20460, 202-755-8050.

II. Presumptions

A. *Acute toxicity: Hazard to wildlife, aquatic species.* 40 CFR 162.11(a)(3)(i)(B)(3) provides that a rebuttable presumption shall arise if a pesticide "(r)esults in a maximum calculated concentration following direct application to a 6-inch layer of water more than ½ the acute LC_{50} for aquatic organisms representative of the organisms likely to be exposed as measured on test animals specified in the Registration Guidelines."

On the basis of scientific studies and information summarized in the Position Document, the Agency has concluded that this risk index has been exceeded by all registrations and applications for registration of pesticide products containing maneb and zineb for use on cranberries, and that a rebuttable presumption against new or continued registration of such products has therefore arisen.

B. *Oncogenicity.* 40 CFR 162.11(a)(3)(ii)(A) provides that a rebuttable presumption shall arise if a pesticide "(i)nduces oncogenic effects in experimental mammalian species or in man as a result of oral, inhalation, or dermal exposure * * *." As a further clarification of the provision, the preamble to the Agency's Interim Procedures and Guidelines for Health Risk and Economic Impact Assessment of Suspected Carcinogens (May 25, 1976; 41 FR 21402) states that "a substance will be considered a presumptive cancer risk when it causes a statis-

[1] A position document, containing an appendix of references, background information, and other material pertinent to the issuance of this notice, has been prepared by the Agency Working Group on EBDC's and is also published with this notice.

[2] Registrants or other interested persons who desire to submit benefit information should consider submitting information on the following subjects, along with any other relevant information they desire to submit:

1. Identification of the major uses of the pesticide, including estimated quantities used by crop or other application.
2. Identification of the minor uses of the pesticide, including estimated quantities used by category such as lawn and garden uses and household uses.
3. Identification of registered alternative products for the uses set forth in (1) and (2) above, including an estimate of their availability.
4. Determination of the change in costs to the user of providing equivalent pesticide treatment with any available substitute products.
5. Assessment of regulation impact upon user productivity (e.g., yield per acre and/or total output) from using available substitute pesticides or from using no other pesticides.
6. If the impacts upon either user costs or productivity are significant, a qualitative assessment of the regulation's impact on production of major agricultural commodities and retail food prices of such commodities.

tically significant excess incidence of benign or malignant tumors in humans or animals."

On the basis of scientific studies and information summarized in the Position Document, the Agency has concluded that this risk index has been exceeded by all registrations and applications for registration of pesticide products containing EBDC's, and that a rebuttable presumption against new or continued registration of such products has therefore arisen.

C. *Other chronic or delayed toxic effects.* 40 CFR 162.11(a)(3)(ii)(B) provides that a rebuttable presumption shall arise if a pesticide "(p)roduces any other chronic or delayed toxic effect in test animals at any dosage up to a level, as determined by the Administrator, which is substantially higher than that to which humans can reasonably be anticipated to be exposed, taking into account ample margins of safety * * *."

On the basis of scientific studies and information summarized in the Position Document, the Agency has concluded that the risk index for teratogenicity has been exceeded by all registrations and applications for registration of pesticide products containing EBDC's, and that a rebuttable presumption against new or continued registration of such products has therefore arisen.

III. Grounds for Pesticide Review in Addition to Rebuttable Presumption Criteria

A. *General.* In addition to the risk criteria set forth in 40 CFR 162.11(a)(3) which require the issurance of a notice of rebuttable presumption against registration or continued registration and a determination by the Administrator to register or cancel a pesticide, 40 CFR 162.11(a)(6) provides that the Administrator may determine that a pesticide should be cancelled or that a hearing should be held if the pesticide poses a substantial question of safety to man or the environment "based on toxicological data, epidemiological studies, use history, accident data, monitoring data, or such other evidence as is available to the Administrator."

A determination to cancel or deny registration of a pesticide or to hold a hearing based upon such data and a finding that a pesticide poses a substantial question of safety need not be preceded by public notice and opportunity for rebuttal prior to the administrative adjudicatory hearing procedure of Section 6(b) of the Act. However, where the Agency is using a notice of rebuttable presumption against registration or continued registration based on the risk criteria of 40 CFR 162.11(a)(3), it is in the public interest to include all evidence which may indicate additional grounds for determining that a pesticide causes unreasonable adverse effects on the environment. Accordingly, evidence derived from studies on EBDC and the degradation product ethylenethiourea (ETU) suggests that EBDC's and ETU cause thyroid disfunction in rodents; skin sensitization in humans and rodents; and mutagenic effects in humans, rodents, and bacteria. The studies in which these effects have been observed are described in the Position Document. Because these effects are of concern to the Agency, it is soliciting relevant information or comment on them.

IV. Registrations and Products Subject to the Notice Claim of Business Confidentiality

All registrants and applicants for registration listed below are being notified by certified mail of the rebuttable presumption existnig against registration and continued registration of their products.

The registrants and applicants for registration shall have 45 days from the date this notice is sent or until October 24, 1977, to submit evidence in rebuttal of the presumption. However, the Administrator may, for good cause shown, grant an additional 60 days during which such evidence may be submitted. Notice of any extension, if granted, will appear in the Federal Register.

A registrant or applicant for registration may, if it desires, assert a business confidentiality claim covering part or all of the information submitted in rebuttal. The registrant or applicant may assert the claim by placing on or attaching to the information a cover sheet, stamped or typed legend, or other suitable form of notice employing language such as "trade secret," "proprietary," or "company confidential." Allegedly confidential portions of otherwise nonconfidential documents should be clearly marked.

If a confidentiality claim is asserted, the information covered by the claim will be disclosed by EPA only to the extent and by means of the procedures set forth in 40 CFR Part 2, Subpart B (41 FR 36906, September 1, 1976). If no confidentiality claim accompanies the information at the time it is received by EPA, EPA will place the information in the public comment file where it will be available for public inspection.

If a registrant or applicant does assert a confidentiality claim for some, but not all, of the information submitted to EPA in rebuttal, the registrant or applicant should furnish two copies of the information to EPA. The first copy should contain all of the information submitted in rebuttal with information claimed as confidential clearly identified. The second copy should be identical to the first except that all information claimed as confidential should be deleted. The second copy will be placed in the public comment file. The first copy will be treated in accordance with the procedures set out above.

V. Duty to Submit Information on Adverse Effects

Registrants are required by law to submit to EPA any additional information regarding any adverse effects on man or the environment which comes to a registrant's attention at any time, pursuant to Section 6(a)(2) of FIFRA and 40 CFR 162.8(d). If any registrant of EBDC products has any published or unpublished information, studies, reports, analyses, or reanalyses regarding any adverse effects in animal species or humans, residues, and claimed or verified accidents to humans, domestic animals, or wildlife, which have not been previously submitted to EPA, the material must be submitted immediately. When responding to this notice, each registrant shall submit a written certification to the Agency that all information regarding any adverse effects known to the registrant has been submitted. In addition, the registrants should notify EPA of any studies currently in progress, including the purpose of the study, the protocol, the approximate completion date, and a summary of all results observed to date.

IV. Public Comments

During the time allowed for submission of rebuttal evidence, specific comments on the presumptions set forth in this notice and on the material contained in the Position Document are solicited from the public. In particular, any documented episodes of adverse effects to humans, domestic animals, or wildlife, and information as to any laboratory studies in progress or completed, are requested to be submitted to EPA as soon as possible. Specifically, information on the fate and effects of EBDC's, its impurities, metabolites, and degradation products on flora and fauna, particularly animals with metabolism similar to that in humans, is solicited. Similarly, any studies or comments on the benefits from the use of EBDC's are requested to be submitted. All comments and information received, as well as any other relevant information and analysis thereof, which come to the attention of the Agency may serve as a basis for final determination pursuant to § 162.11(a)(5).

All comments and information should be sent to:

Federal Register Section, Technical Services Division (WH-569), room 401 East Tower, 401 M St. SW., Washington, D.C. 20460.

Three copies of the comments or information should be submitted to facilitate the work of the Agency and others interested in inspecting them. The comments and information should bear the identifying notation "OPP-30000/18." Comments and information received within the specified time limit shall be considered before it is determined whether a notice shall be issued in accordance with 40 CFR 162.11(a)(5)(ii).

Comments received after the specified time period will be considered only to the extent feasible, consistent with the time limits imposed by 40 CFR 162.11(a)(5)(ii). All written comments and information filed pursuant to this notice will be available for public inspection in the office of the Federal Register Section from 8:30 a.m. to 4 p.m. during normal working days.

Interested persons are encouraged to take advantage of the opportunity to inspect Agency files during normal work-

ing hours since: (1) all of the information received may serve as a basis for final determination pursuant to § 162.11 (a) (5), and (2) the Agency will not generally publish a summary of information received in the FEDERAL REGISTER at the close of the rebuttal period.

Your cooperation is solicited in identifying any errors or omissions which may have been made in the following computer listings. Corrections to the listings may not necessarily be published in the FEDERAL REGISTER, but rather handled by mail with affected parties. Omissions will be corrected by notice in the FEDERAL REGISTER.

Dated: August 2, 1977.

EDWIN L. JOHNSON,
Deputy Assistant Administrator, for Pesticide Programs.

ETHYLENEBISDITHIOCARBAMATES: POSITION DOCUMENT 1

ETHYLENEBISDITHIOCARBAMATES WORKING GROUP NANCY BEACH, PH.D., PROJECT MANAGER OFFICE OF SPECIAL PESTICIDE REVIEWS U.S. ENVIRONMENTAL PROTECTION AGENCY

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INTRODUCTION

The ethylenebisdithiocarbamates (EBDC's) are a subgroup of a large group of organosulfur compounds, the dithiocarbamates. Complexes of metals with EBDC's constitute the most important agricultural fungicides in current use. Six EBDC's have registered fungicidal uses in the United States: Amobam®, nabam, and four metal complexes—metiram, mancozeb, maneb, and zineb.

I. BACKGROUND

A. *Nomenclature.* Table I gives those names (common and chemical) accepted for use in the ingredient statement on pesticide products as required by FIFRA regulations (*1*). The trade names and the Chemical Abstracts Service (CAS) names and registry numbers are also tabulated. Because no common name has been approved for Amobam®, this trade name will be used in this document.

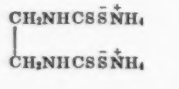
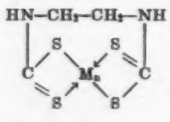
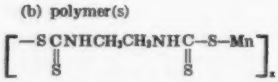
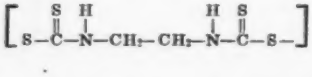
B. *Chemical and physical properties.* Table 2 presents the chemical structure, molecular formula, molecular weight, solubility, and other physical and chemical properties associated with each EBDC.

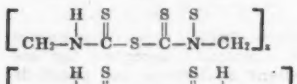
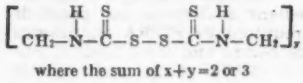
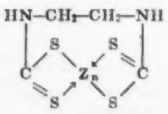
TABLE 1.—*EBDC nomenclature*

Common name	Label chemical name	Trade name(s)	CAS name	CAS No.
1. None	Diammonium EBDC	Amobam®	Carbamodithioic acid, 1, 2-ethanediylbis-, diammonium salt.	3566-10-7
2. Mancozeb [1]	[2]	Dithane® M-45 Manzate® 200	[[1,2-ethanediylbis [carbamodithioato]] (2-)] manganese mixture with [[1,2-ethanediylbis [carbamodithioato]] (2-)] zinc.	8018-01-7
3. Maneb	Manganese EBDC	Manzate® Dithane® M-22	[[1.2-ethanediylbis [carbamodithioato]] (2-)] manganese.	12427-38-2
4 Nabam	Disodium EBDC	Parzate® Dithane® D-14	Disodium 1,2-ethanediylbis [carbamodithioate].	142-59-6
5. Metiram [3]	[2]	Polyram®	Metiram	9006-42-2
6. Zineb	Zinc EBDC	Dithane® Z-78	[[1.2-ethanediylbis [carbamodithioato]] (2-)] zinc.	12122-67-7

[1] Recognized in Europe but not yet established in the United States. These names will be used in this document for convenience.
[2] Zinc ion and manganese ethylene bisdithiocarbamate 80 percent, a coordination product of manganese 16 percent, zinc 2 percent, ethylene bisdithiocarbamate 62 percent.
[3] Mixture of 5.2 parts by weight (89.9 percent) of ammoniates of [ethylenebis(dithiocarbamato)] zinc with 1 part by weight (16.1 percent) ethylenebis[dithiocarbamic acid], bimolecular and trimolecular cyclic anhydrosulfides and disulfides.

TABLE 2.—*Chemical and physical properties of EBDC's*

Chemical structure	Molecular formula	Molecular weight	Physical properties	Solubility
Amobam® 	$C_4H_{14}N_4S_4$	246.21	Unstable as dry material; aqueous solutions pale yellow to green; melting point 72.5° to 72.8°C (2).	Soluble in water; slightly soluble in alcohol and acetone; insoluble in ben- and heptane (2).
Mancozeb	(1)	(2)	Greyish-yellow powder which decomposes before melting; flash point 138°C (3).	Practically insoluble in water and in most organic solvents (3).
Maneb: (a) Monomer 	$C_4H_6N_2S_4Mn$	265.3	Yellow crystalline solid which decomposes before melting and on exposure to moisture or to acids (3).	Slightly soluble in water and insoluble in most organic solvents (3).
(b) polymer(s) 	$(C_4H_6MnN_2S_4)x$	(2)	Light-colored solid which decomposes before melting and on exposure to moisture or acids (3).	Similar to monomer.
Metiram 	(1)	(2)	Light-yellow solid which melts above 120°C with decomposition; unstable under strongly acid or alkaline conditions or a combination of heat and moisture (4).	Practically insoluble in water and in most organic solvents; soluble with decomposition in pyridine (Martin, 1974).

Chemical structure	Molecular formula	Molecular weight	Physical properties	Solubility
where n=1 or 2   where the sum of x+y=2 or 3				
Nabam 	$C_4H_6N_2Na_2S_4$	256	Colorless crystals of limited stability; generally marketed in solution (3).	Soluble in water (20 pct) to form yellow solution (3).
Zineb: (a) Monomer 	$C_4H_6N_2S_4Zn$	275.8	Off-white solid which decomposes before melting; negligible vapor pressure at 25°C; somewhat unstable to light, heat, and moisture (3, 6).	Practically insoluble in water (10 p/m at 25°C) but soluble in pyridine, chloroform, and carbon disulfide (3, 5).
(b) Polymer(s) [S.CS.NH.CH_2CH_2NH.CS.S.Zn]$_x$	$(C_4H_6N_2S_4Zn)_x$	(2)	Light-colored powder produced when precipitated from concentrated aqueous solutions of Amobam® or nabam with zinc sulfate (3, 7).	Similar to monomer.

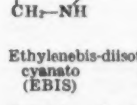
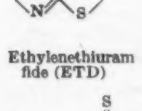
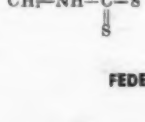
[1] Variable (see table 1).

[2] Indefinite.

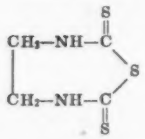
The chemistry of the EBDC's is complicated by their instability and their propensity to form polymers, especially in the presence of certain ubiquitous metallic ions. They are subject to a manifold degradation which begins with production and continues with storage and application (*8*). Important factors influencing chemical degradation are presence of oxygen, humidity, temperature, and pH (*8*). A number of common degradation products have been identified; the names, chemical structures, and other information are presented in Table 3 for the major ones. While all of these and other degradation products can result from EBDC degradation, the relative proportions of them do appear to be different for the individual EBDC's. Ethylenethiourea (ETU) appears to be the dominant degradation product of zineb, whereas nabam and maneb yield a larger proportion of ethylenebisdiisothiocyanato sulfide (EBIS) (*8*).

ETU has been detected in 28 different commercial formulations containing maneb, zineb, or mancozeb (*9*). The amount of ETU in commercial formulations has been shown to increase with storage under controlled laboratory conditions of elevated temperature and humidity. Formation of ETU appeared to be greatest in maneb formulations; amounts ranged up to 14.5 percent after 39 days of storage. Formulations of zineb and mancozeb developed as much as 10 percent ETU over the 39-day storage period (*10*).

TABLE 3.—*EBDC degradation products*

Name and chemical structure	Molecular formula	Molecular weight	CAS name	CAS number	Physical/chemical properties
Ethylene thiourea (ETU). 	$C_3H_6N_2S$	102.2	2-imidazolidinethione...	96-45-7	White crystals melting at 203° to 204°C; soluble in water; insoluble in acetone, ether, chloroform, and benzene (11).
Ethylenebis-diisothiocyanato sulfide (EBIS) 	$C_4H_4N_2S_3$	176.3	3H-imidazo [2,1-c]-1,2 4-dithiazole-3-thione, 5,6-dihydro.	33813-20-6	White powder that melts at 121° to 124°C.
Ethylenethiuram disulfide (ETD) 	$C_4H_6N_2S_4$	210.3	1,2,4,7-Dithiadiazocine-3,8-dithione, tetrahydro.	3062-38-0	

Ethylenethiuram monosulfide (ETM).	$C_4H_8N_2S_3$	178.3	[1] 33813-20-6



[1] Chemical abstracts service assigns the same registry number to ETM and EBIS because the chemical structure for what had been referred to as ETM was shown in 1971 to be actually that of EBIS (12).

In 1973, Canadian scientists reported that boiling converts zineb on food to ETU. Amounts of ETU in the cooked foods were from five to fifteen times greater than those in the uncooked samples (*13*). In other studies, the application of heat (100°C) for 10 minutes degraded mancozeb, maneb, and zineb suspensions in a mixture of dioxane and water primarily to ETU (*14*). American scientists corroborated these findings and showed that the percentage of ETU formed (on a weight/weight basis of ETU/EBDC) upon cooking spinach, carrots, and potatoes fortified with EBDC's ranged from 11.2 percent for maneb in potatoes to 26.5 percent for metiram in spinach. (*15*).

Result of a 1974 collaborative analytical study designed by USDA and EPA and including several government and industry laboratories clearly showed that snap beans treated with maneb under commercial conditions contained ETU after commercial canning (*16*).

A monitoring program initiated in 1972 by the Canadian government and published in 1975 found that 33 percent of food samples contained detectable ETU residues (*17*). In particular, samples of canned spinach and orange peels had averages of 0.047 ppm and 0.083 ppm ETU, respectively.

In Canadian field tests on tomatoes, 24 to 37 percent of the initial EBDC residue remained on the tomatoes 14 days after application (*18*). When these tomatoes were heated, 38 to 48 percent of the EBDC residue was converted to ETU. Residues of ETU measured after cooking ranged from 0.006 to 1.42 ppm.

A recent study (*19*) on the effects of commercial food processing on residues of EBDC's and ETU appears to support the finding that during commercial processing, as well as home cooking, EBDC residues in food are converted to ETU causing a subsequent increase in ETU residues. This study is currently being reviewed by EPA chemists.

C. *Analytical methodology.* From the establishment of the first EBDC tolerances for zineb in 1955, the official analytical methodology used by the Food and Drug Administration (FDA) for the analysis of EBDC residues on food has been a nonspecific method based on the colorimetric determination of a yellow complex formed by reaction of evolved carbon disulfide (CS_2) with a reagent after acid hydrolysis of the sample (*20*). Because the method is incapable of distinguishing between residues of individual EBDC's, all EBDC tolerances are established for residues calculated as zineb.

A further limitation of the method is its inability to distinguish EBDC residues from those of another major subgroup of dithiocarbamate fungicides, the dimethyldithiocarbamates (ferbam and ziram). Refinements of this basic methodology have been reported, but no official methodology exists today that will separate and measure residues of individual EBDC's on crops.

Analytical methodology for ETU has been more actively developed because of concern about its presence in food. The FDA methodology for EBDC residues does not detect ETU since ETU cannot evolve CS_2. Several reports have appeared describing ETU analytical methods, all of which are refinements of a basic gas-liquid chromatographic (GLC) technique first reported by EPA chemists in 1971 (*21*). There was no official ETU method as used by FDA until June 14, 1977, when the GLC method, refined by EPA chemists (*22*), was approved for "interim first action" status by the Association of Official Analytical Chemists (AOAC). (This action is expected to be followed by AOAC adoption to "official first action" status in October, 1977.)

Nine laboratories have tested the EPA method, which can detect as little as 0.004 ppm ETU, and have reported recovery of 85 to 97 percent ETU from fortified foods (*23*). It is now the official method for use by FDA in surveillance and compliance programs.

D. *Manufacturing process, technical products, and formulations.* The method "thought to be used" for the commercial production of zineb is reaction of ethylenediamine (EDA) with CS_2 in the presence of alkali followed by precipitation of zineb with addition of zinc sulfate (*24*). Zineb can also be made, as is often done in the field, by mixing nabam or Amobam ® with zinc sulfate (*24*). The preparation of maneb is analogous to that of zineb except that manganese sulfate is used in place of zinc sulfate for its precipitation (*25*). Mancozeb can be prepared from an aqueous slurry of maneb and a water-soluble zinc salt (*26*). Amobam ® and nabam are also made by reaction of EDA and CS_2 in the presence of either NH_3 to yield the diammonium EBDC or NaOH to yield the disodium EBDC (*7*). Metiram is made by reaction of EDA and CS_2 in the presence of zinc oxide and hydrogen peroxide (H_2O_2) or by oxidation of an aqueous solution of nabam with H_2O_2 followed by precipitation with zinc sulfate (*7*).

Formulations with the indivilual EBDC's as the sole active ingredient include dusts, wettable powders, concentrates (solid, solution, and suspension), and other types (Tables 5).

In addition to the formulated products which contain EDCC's alone as active ingredients, there are numerous products in which they are mixed with other active ingredients such as ferbam, thiram, ziram, endosulfan, carbaryl, rotenone, parathion, lindane, methoxychlor, captan, toxaphene, malathion, pentachloronitrobenzene, sulfur, streptompcin sulfate, pyrethrins, copper, methompyl, and others.

Table 5 gives number of Federal and State registrations for each EBDC.

TABLE 4.—*Formulations with EBDC's as sole active ingredient. All numbers are expressed as percentages*

EBDC	Dust		Wettable powders	Concentrates			Other
	Ready to use	Sprayed		Solid	Solution	Suspension	
Amobam®					42–48		
Mancozeb	0.08–80	5.6–80	80	80	80		3.75 (fertilizer containing pesticides).
Maneb	1.4–50	80	40–90	40–80	37–42.5	25–80	35 (granular pellets). 1.9–10 (fertilizer containing pesticides). 1.4 (dust, pressurized). 3.2 (coating for inanimate surfaces).
Metiram	3.5–53.5		80	80			7 (nonaqueous solutions, used undiluted).
Nabam				22–93	22		22 (aqueous solution, used undiluted).
Zineb	5–19.5		(1)	75	75	25	6.5 (granular pellets).

[1] Generally 75.

TABLE 5.—*EBDC registrations*

EBDC	Registrations	
	Federal	State
Amobam®	2	0
Mancozeb	77	34
Maneb	217	89
Metiram	51	2
Nabam	48	1
Zineb	268	87

E. *Production.* Production data are confidential information under Section 7(c) and 10 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and are therefore prepared for EPA use only (*27*). The last published production data for zineb and nabam were 1,125,000 kg (2,500,000 pounds) and 872,000 kg (1,900,000 pounds), respectively, and 1969 in the U.S. (*28*). Production dota for Amobam ® were not published for that year. Production of maneb in 1972 was estimated at 5.5 million kilograms (12,100,000 pounds) with exports of 2 million kilograms (4,400,000 pounds) (*29*).

F. *Registered uses.* Table 6 shows the registered uses for each EBDC.

G. *Human and environmental exposure.*—1. *Food.* From 1964 to 1970, the dithiocarbamates were included in the Food and Drug Administration's (FDA) "Total Diet Program" which analyzes pesticide residues in composite food samples collected from retail stores and prepared for consumption. During these years very few samples were found with dithiocarbamate residues. Beginning in October 1970, dithiocarbamate analyses were discontinued, the suggested rationale for this decision being that "dithiocarbamates are not considered as being regular components of the dietary intake of pesticide residues because of the continued low incidence and levels" (*30*).

TABLE 6.—*Registered uses of BDC fungicides by site*

EBDC	Food	Other
Amobam®.	Over 20 fruit, nut, vegetable, and field crops.	Some ornamental plants.
Mancozeb..	Over 25 agricultural fruit, vegetable, and field crops and many seeds.	Agricultural ornamentals.
Maneb.....	Over 40 fruit, vegetable, and field crops and many seeds.	Do.
Metiram...	Over 10 fruit, vegetable, and field crops, and several seeds.	Do.
Nabam....	Over 35 fruit, vegetable, and field crops.	Industrial recirculating water cooling towers, air washers, evaporative condensers, pulp and papermills, and cane sugar mills; and leather, tobacco, agricultural ornamentals, and cotton.
Zineb.....	Over 50 fruit, vegetable, and field crops and many seeds.	Paints, fabrics, leather, linen and other surfaces (painted, paper, plastic, wood), and tobacco and many agricultural ornamentals.

Because the FDA analytical procedure for dithiocarbamates has serious limitations, results of the "Total Diet Program" analyses cannot be considered a realistic measure of human exposure to EBDC's or ETU. These limitations are: 1. The analytical method did not distinguish EBDC's from other dithiocarbamates. 2. No correction was made for recoveries, yet recovery experiments indicated that for dithiocarbamate residues recovery could be as low as 36 percent (*31*). 3. Until June 1968, commodities in those food categories that had dithiocarbamate residues were cooked before analysis, and cooking destroys part or all of the EBDC residues. 4. The method did not detect ETU.

A second FDA program, which examines samples of raw agricultural commodities for wholesale distribution, probably obtains results more reflective of the actual EBDC residues because no residues are lost in cooking. The few data obtained in this program indicate that dithiocarbamate residues are greater than those measured in the total diet program. Notably high residues were found in leaf and stem vegetables, the highest (23 ppm) having been measured in a spinach sample collected in Texas in 1972. Although residues showed up primarily in leaf and stem vegetables, 3.6 ppm was measured for one large fruit sample collected during 1967–1968 (*32*).

2. *Episodes.* A review of incidents involving EBDC's that have been reported to EPA's Pesticide Episode Response System (PERS) since 1972 revealed only two episodes which were directly related to an EBDC product and in which the EBDC was the sole active ingredient. Both episodes involved crashes of aerial applicators spraying mancozeb. No adverse effects on human, plants, or animals were reported in these two incidents. Several cases of skin or eye irritation were reported in workers in greenhouses or plant nurseries, but in none of these cases were the inert ingredients (solvents, etc.) identified nor was the involvement of the EBDC alone verified. It cannot therefore be concluded that this irritation was caused by the EBDC's.

Contact dermatitis has been reported in 86 farm workers who worked in fields sprayed with 0.5 Percent suspension of zineb. In 19 of 22 workers who had repeated contacts with zineb, the developing dermatitis was extensive and severe (*33*).

II. REGULATORY HISTORY

The United States established the first tolerances for pesticides under Section 408 of the Food, Drug and Cosmetic Act in 1955 after public hearings conducted by the Food and Drug Administration. Zineb was the only EBDC fungicide for which tolerances were set. Tolerances of 7 ppm of zineb on "fruits and vegetables" were established on "very little data showing residues from actual commercial use" and with the knowledge that oral administration of zineb to male and female weanling rats at 5 and 2,000 ppm for 10 days produced thyroid hyperplasia at the high dosage but not at the low one. Studies published in 1948 had reported definite goitrogenic effects associated with oral administration of 1,000 ppm of another EBDC, nabam, to weanling rats for 9 or 10 days (*34*). The two companies holding patents on zineb at the time, Rohm and Haas and E. I. duPont de Nemours, had requested tolerances of 20 ppm on various fresh fruits and vegetables.

Maneb tolerances were first established in October 1955 at the request of duPont (PP No. 21). A 7 ppm tolerance was allowed for maneb on more than 20 crops.

In 1957, tolerances for zineb on spinach, lettuce, and six other related crops were increased from 7 ppm to 25 ppm; new tolerances of 25 ppm on Chinese cabbage and romaine were granted with the condition that the interval between application and harvest be increased since, as noted by the chemistry reviewer, "contradictory to our previous information indicating chemical instability and rapid dissipation of dithiocarbamate residues, the Rohm and Haas residue data show that residues of the dithiocarbamates are quite persistent" (*35*). Data supporting these two petitions (PP No. 76 and No. 101) were obtained in a 2-year feeding study in rats and a 1-year feeding study in dogs (*36*). In the rat study, mild thyroid hyperplasia was seen in about 40 percent of animals at 500 ppm, the lowest of five test doses. Goitrogenic effects were induced by the other four doses. In the dog study, only the highest of three doses (20, 2,000, and 10,000 ppm) caused thyroid hyperplasia. Although the toxicologist reviewing the data concluded that the increased tolerances be granted, he cautioned that "because of the seriousness of the goitrogenic effect to some people, we do not believe that a tolerance of 25 ppm should be extended to all crops which now have a tolerance of 7 ppm of the dithiocarbamates. More evidence on the actual human intake of these substances and/or more evidence on safety would be required" (*37*).

The first mancozeb tolerance was established in December 1962 for 15 ppm on bananas (PP#374). The first metiram tolerances were established in July 1967 for five crops (apples, celery, cantaloupe, cucumbers, and tomatoes) (PP No. 488). The highest metiram tolerance was 7 ppm on apples. Toxicity data submitted in support of these tolerances included 2-year feeding studies of dogs and rats and a three-generation rat reproduction study.

Final action on a tolerance petition for 1 ppm of zineb on potatoes, submitted in 1970, was never taken because of notification by FDA (*38*) that results of an FDA study of rats fed ETU were confirming findings of carcinogenic activity reported previously (*39*). These results, plus the fact that EPA chemists had found ETU in commercial EBDC formulations and at enhanced

concentrations with elevated temperature and humidity (*40*), led those in charge of setting tolerances to recommend in October 1971 revocation of EBDC tolerances for all uses except those for which no residues were detected (*41, 42, 43*). No action was taken on revocation primarily because evidence that there were significant residues of ETU on crops was insufficient. Representatives of three principal EBDC procedures (du Pont, Rohm and Haas, and FMC) met with EPA in early 1972 and agreed to work with the Agency to reduce the tolerances for the major crops on which EBDC's are used (*44*).

Subsequently, tolerances for EBDC residues on major crops were lowered. Current tolerances for mancozeb, maneb, metiram, and zineb appear in the Code of Federal Regulations (40 CFR) at 180.176, 180.110, 180.217, and 180.115, respectively. Interim tolerances for mancozeb, metiram, and zineb appear at 40 CFR 180.319.

FDA allows 3 ppm nabam to control microorganisms in cane sugar and/or beet sugar mills (40 CFR 121.1155) and to control slime formation in the manufacture of paper and paper board that contact food (40 CFR 121.2505).

In 1973, FDA revoked the use of a food additive, 2-mercaptoimidazoline, on the grounds that it could rearrange to form ETU, a carcinogen (*45*). In 1974, FDA proposed to regard any drug or cosmetic product or medical device as adulterated if 2-mercaptoimidazoline was used in the manufacture of components which might come into contact with a user, a patient, or a drug product (*46*). No final regulation has yet been published.

In evaluations of the EBDC's from 1965 through 1970, the FAO/WHO Joint Meeting of Pesticide Experts recommended an acceptable daily intake (ADI) for man (0 to 0.025 mg per kilogram body weight). In the 1974 FAO/WHO evaluation, a new and lower temporary ADI (0.005 mg/kg was recommended on the basis of reports that the EBDC's are teratogenic and that ETU is teratogenic, mutagenic, and oncogenic. The new ADI is in effect until the November 1977 Joint Meeting where re-evaluation of the EBDC's is planned (*47*).

In August 1976, after a series of meetings with Agriculture Canada and with the major EBDC manufacturers, the Canadian government revoked all EBDC tolerances and replaced them with interim tolerances to cover only essential uses for which there are no suitable alternative fungicides available (*48*). The Canadian action was taken because ETU had been shown to have oncogenic, teratogenic, and weak mutagenic activity.

III. SUMMARY OF SCIENTIFIC EVIDENCE TO SUPPORT REBUTTABLE PRESUMPTION

The following adverse effects of EBDC's meet or exceed the criteria for issuance of a rebuttable presumption against registration (RPAR).

A. *Hazard to wildlife: Aquatic organisms.* Section 162.11(a)(3)(i)(B)(3) specifies that a rebuttable presumption shall arise against a pesticide's use for direct application to water of such use would result in concentrations in a 6-inch layer of water more than one-half the acute LC_{50} for aquatic organisms likely to be exposed. Data indicate that pesticide products containing maneb labeled for use agains cranberry fruit rot at an application rate of up to 6 pounds active ingredient per acre results in a concentration of 4.4 ppm in a 6-inch layer of water. McCann (*49*) reported a 96-hour LC_{50} of 0.99 to 1.00 ppm for bluegills. Data further indicate that zineb products labeled for use against cranberry fruit rot at an application rate of up to 4.8 pounds active ingredient per acre results in a concentraion of 3.52 ppm in a 6-inch layer of water. A 26-hour LC_{50} of 0.2 ppm has been reported for Daphnia magna (*50*). Therefore, the criterion of § 162.11(a)(3)(i)(B)(3) is exceeded for maneb and zineb.

B. *Oncogenic effects in test animals.* 40 CFR 162.11(a)(3)(ii)(A) provides that a rebuttable presumption shall arise if a pesticide's ingredient(s), metabolite(s), or degradation product(s) induce(s) "oncogenic effects in experimental mammalian species or in man as a result of oral, inhalation or dermal exposure." 40 CFR 162.3 (bb) defines the term "oncogenic" as "the property of a substance or a mixture of substances to produce or induce benign or malignant tumor formation in living animals."

1. *Maneb.* Mice were given a single weekly dose of maneb (500 mg/kg body weight) by stomach tube for 6 weeks. Lung adenomas developed in 4 of 42 test animals, but none appear in 44 control animals of one strain. In a second stain lung adenomas developed in 23 of 42 test animals compared to 12 of 45 controls $p=0.007$ (*51*).

In a 1976 evaluation of the carcinogenic risk of maneb, a working group of the United Nations International Agency for Research on Cancer (IARC) concluded from this study that maneb produced an increased incidence of lung tumors in mice of the second strain (*25*). The EPA Carcinogen Assessment Group (CAG) subsequently reviewed this study and concluded that "oral administration of maneb significantly increased the incidence of benign tumors of the lung in one strain of mouse" (*52*).

2. *Zineb.* Mice of two strains (A and C57BL) were given weekly doses of zineb (3,500 mg/kg body weights; purity unspecified) by stomach tube in 1 percent starch solution for 6 weeks and then sacrificed 3 months after the last dosing. Lung adenomas were found in the treated animals of both strains and in the controls of strain A but not in the controls of the C57BL strain (*53*). When mice of the C57BL strain were given lower weekly doses of zineb (1,750 mg/kg body weight) by the same administration route but over a longer period of time (11 weeks), lung adenomas were found in the treated animals but not in controls. The number of mice that developed lung adenomas are given in Table 7.

TABLE 7.—*Numbers of zineb—treated mice that developed lung adenomas*

Dose	Strain A		Strain C57BL	
	Treated	Controls	Treated	Controls
3,500 mg/kg	35/101	30/97	6/79	0/87
1,750 mg/kg	(1)	(1)	2/29	0/59

[1] Not treated.

In a 1976 evaluation of the carcinogenic risk of zineb, IARC concluded from this study that zineb produced an increased incidence of lung tumors in mice of one strain (*25*). CAG subsequently reviewed this study and concluded that "strain C57BL mice ingesting zineb had an increased incidence of lung adenomas" (*52*).

3. *Ethylenethiourea.* ETU, the degradation product and metabolite common to all the EBCD's, is oncogenic in mice and rats.

a. *Mice.* Two strains of mice given a single oral dose of ETU (646 ppm) daily for over 80 weeks developed liver tumors, lung tumors, and lymphomas (*39,54*). (Thyroid glands were not examined for histopathologic changes.) Liver tumors developed in 100 percent of the females of strain X compared with 0 percent in controls ($p<0.001$) and in 100 percent of the males of strain Y compared with 6 percent in controls ($p<0.001$). In strain X males, liver tumors developed in 88 percent of the animals compared with 21 percent in controls ($p<0.001$). In strain Y females, 56 percent of the animals had liver tumors compared with none in the controls ($p<0.001$) (*52*). The incidence of liver tumors is given in Table 8.

TABLE 8.—*Numbers of male and female mice with malignant tumors of the liver*

Strain	Dose (parts per million)	Tumor of the liver	
		Male	Female
X	0	[1] 3/14	0/18
X	646	[1] 14/16	18/18
Y	0	1/18	0/18
Y	646	18/18	9/16

[1] Information on missing mice is not available.

In a 1974 evaluation of this study, IARC commented that "the reported increased incidence of liver cell tumors in two strains of mice following oral administration awaits confirmation" (*11*). However, at that time, IARC did not have all the details of the Innes study; in particular, they lacked the NTIS report, which presents more complete information. CAG concluded that ETU "induced highly significant incidences of tumors of the liver in males and females of both strains. There also were significant increases in tumors at all sites, but this was essentially due to the increase in liver tumors" (*52*).

b. *Rats.* ETU has been administered orally to rats in two different studies. In the first, two doses (350 and 175 ppm) were given daily for 18 months and the animals were observed for 6 months. Thyroid carcinomas were produced in test animals at both doses, but they did not occur in the controls (*55*). The incidence of thyroid carcinomas and adenomas is given in Table 9.

TABLE 9.—*Number of rats that developed lesions of the Thyroid gland after ingesting ETU*

Dose	Male		Female	
	Adenoma	Carcinoma	Adenoma	Carcinoma
0 p/m	0/32	0/32	0/32	0/32
175 p/m	0/26	3/26	2/26	3/26
350 p/m	0/26	[1] 17/26	1/26	8/26

[1] There were metastases to the lungs of 2 rats.

Among rats fed 350 ppm ETU, 61 percent of the males ($p<0.001$) and 31 percent of the females (<0.001) had follicular and papillary carcinomas of the thyroid.

Malignant tumors developed in organs other than the thyroid gland in animals fed ETU. These tumors included a carcinoma of the colon in one male rat fed 175 ppm and squamous cell carcinomas in two male rats fed 350 ppm (*52*).

In the second study, rats were fed ETU (500, 250, 125, 25, or 5 ppm) for almost 2 years. Thyroid carcinomas were produced by dosages of 500 and 250 ppm; thyroid adenomas by 500, 250, and 125 ppm; and thyroid hyperplasia mainly by 125, 25, and 5 ppm (*56*). The development of thyroid carcinomas progressed from 11 percent in the controls to 64 percent in animals fed 25 ppm ETU and to 97 percent in animals dosed with 500 ppm ETU (*52*). The incidence of thyroid lesions is given in Table 10.

TABLE 10.—*Number of rats that developed thyroid lesions after ingesting ETU for 12 to 24 mo*

Dose	Hyperplasia	Adenomas	Carcinomas	Total
0 p/m	4/72	2/72	2/72	8/72
5 p/m	20/75	0/75	2/75	22/75
25 p/m	41/73	5/73	1/73	47/73
125 p/m	44/73	1/73	[1] 2/73	47/73
250 p/m	27/69	21/69	16/69	64/69
500 p/m	3/70	3/70	62/70	68/70

[1] Number of rats with metastases of the lung is not given. The authors state: "When rats developing thyroid tumors during year 1 were added to these figures, there was an increase in thyroid tumors in rats fed 125 p/m ETU compared with controls. The tumors also arose earlier."

Thyroid lesions were dose related in treated rats. Lesions at the lower doses were mainly hyperplasia and a few adenomas. Incidences of thyroid lesions among rats ingesting 250 ppm consisted of 23 percent carcinomas, 30 percent adenomas and 39 percent hyperlasia. Lesions in rats fed 500 ppm were 80 percent carcinomas (*52*).

There was no indication of reversibility of thyroid gland tumors in treated rats for 66 weeks who were returned to the control diet for the remainder of the study (*52*).

Malignant tumors other than thyroid carcinomas were increased in rats fed 5 and 250 ppm ETU. These tumors consisted primarily of carcinomas of the mammary gland, hepatomas and squamous cell carcinomas but sarcomas, lymphosarcomas, and fibrosarcomas were also observed.

Because the second study was not available at the time of their deliberations, IARC concluded on the basis of the first study alone that ETU produced thyroid carcinomas (*11*).

CAG concluded that ETU "increased significantly the frequency of thyroid cancers in two different studies on rats" (*52*).

On the basis of this five studies, the Working Group concluded that the evidence that long-term oral administration of EBDC's or ETU is oncogenic in mice and rats supports the issuance of an RPAR.

C. *Teratogenic effects in test animals.* 40 CFR 162.11(a)(3)(ii)(B) provides that "a rebuttable presumption shall arise if a pesticide's ingredient(s), metabolite(s), or degradation product(s) produces any other chronic or delayed toxic effect in test animals at any dosage up to a level, as determined by the Administrator, which is substantially higher than that to which humans can reasonably be anticipated to be exposed, taking into account ample margins of safety."

In 1973, Khera reported that ETU administered to rats in multiple oral doses is teratogenic (*57*). Female Wistar rats were given single daily oral doses of ETU (5, 10, 20, 40, or 80 mg/kg). The rats were divided into three groups: each of which received the above dosages. (1) Those treated 21 to 42 days before onset of pregnancy until day 15 of gestation; (2) those treated on days 6 to 15 of gestation; and (3) those treated on days 7 to 20 of gestation. Pregnancy was successful in 10 to 18 rats at each dosage in each group, with the exception of group 2 rats fed 80 mg/kg ETU; treatment was lethal to 9 of 11 rats in this group. Fetal survival was not affected by any dose, but growth was retarded in fetuses from rats fed 40 or 80 mg/kg ETU. Abnormalities occurred in fetuses of rats fed 10 mg/kg or more ETU. Anomalies observed occurred in all three groups and appeared to be dose dependent. In group 1, the percentages of malformed fetuses at 20 and 40 mg/kg were 11 and 83 percent, respectively; those in group 2 at 10, 20, 40, and 80 mg/kg were 1, 17, 80, and 100 percent; those in group 3 at 10, 20, and 40 mg/kg were 3, 12, and 91 percent. The only other dosage used, 5 mg/kg, was considered the no-effect level (NEL). The anomalies observed included meningoencephalocele, meningorrhagia, meningorrhea, hydrocephalus, obliterated neural canal, abnormal pelvic limb posture with equinovarus, and short or kinky tail.

In a subsequent study, single oral doses of ETU (240 mg/kg) were administered to rats during the gestation period (days 10 to 21) to establish the relation between the type of anomalies seen and the day of treatment (*58*). Malformations induced by administration at the onset of organogenesis (day 10) were restricted to the pelvic region and included spina bifida, ectopic genitalia, and nephrosis. Administration on days 12 to 15 did not produce spina bifida or ectopic genitalia but did produce cleft palate, tail defects, and sternoschisis. After day 16, hydropic anomalies resulted. The authors state that this study showed ETU to be a unique teratogen in that it produces simultaneously anomalies that have been considered mutually exclusive (hydrocephelus and exencephaly). Unlike other teratogens, it also induces cranial defects after closure of the anterior neuropore.

In a recent study of the metabolic fate of ^{14}C–ETU in pregnant rats, a single oral dose (100 mg/kg) given on day 12 of gestation was absorbed easily from the gastrointestinal tract and translocated into many body tissues, including the fetus, within 2 hours of administration (*59*). After 24 hours, the level of ^{14}C-count (radioactivity) had decreased in all tissues except the thyroid in which it accumulated.

In determining whether an ample margin of safety exists to protect humans from teratogenic effects of ETU, the Working Group took into account the following factors:

(1) Tolerances exist for EBDC's on many different crops.

(2) EBDC's are converted to ETU with cooking.

(3) There are few data concerning actual intake of EBDC's or ETU in food.

The Working Group, therefore, determined that a reasonable approach is to assume that there is stoichiometric conversion of EBDC's to ETU and that the best estimate of daily intake is given by calculation of theoretical daily intake from existing EBDC tolerances. If the EBDC residues are assumed to be at tolerance levels and food factors established by FDA (*60*) are used, the theoretical daily human intake of ETU is calculated as 0.02 mg/kg (*61*). If the teratogenic NEL established by Khera (5 mg/kg body weight) is used, the resulting margin of safety is 250 (*61*).

The Working Group is concerned that this estimate of exposure does not include possible exposure from home use other than what may be on foods. The population at high risk from the teratogenic activity of ETU is composed of women of child-bearing age. The Working Group concludes that the margin of safety is not great enough to protect this population from the teratogenic effects of ETU, and that an RPAR be issued.

The Working Group is further concerned that the theoretical daily intake of EBDC's (0.06 mg/kg) exceeds the acceptable daily EBDC intake recommended by FAO/WHO (0.005 mg/kg) by a factor of 12.

IV. *Other adverse effects.* This section addresses adverse effects which EBDC's may produce but for which insufficient evidence exists to issue a rebuttable presumption. The Working Group recommends that the Agency solicit comment on the evidence presented below and encourage the submission of additional studies or relevant information on these effects.

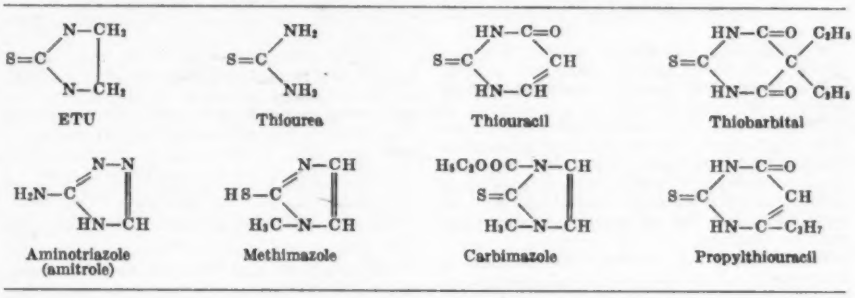
A. *Thyroid effects.* Deficiencies of thyroid function (hypothyroidism) can be manifest at any age. The condition, when fully developed, is characterized by hypertrophy of the thyroid or goiter; puffiness of the face; increased water retention and sometimes true edema; cold, dry skin; scaly scalp; loss of hair; changes in voice; faulty hearing; decreased appetite; decreased gastrointestinal activity; impaired mentality; common constipation and abdominal distention; weakness of voluntary and perhaps involuntary muscles; drowsiness; and sensitivity to the cold (*62*).

The presence of hypothydoidism in infants can result in "cretinism," mental retardation, and decreased growth rate as well. Unfortunately, cretinism and retardation are not detectable at birth and are only recognized at 3 to 5 months of age. To be effective, treatment must start long before these obvious changes have come about.

Because the antithyroid drugs currently used to treat hyperthyroidism readily pass the placental barrier and can induce hypothyroidism in the developing fetus, labels for their use caution against use alone during pregnancy. Nursing is never allowed during drug therapy (*63*).

The antithyroid drugs currently used to treat hyperthyroidism act primarily by inhibiting the formation of thyroid largely by interfering with the binding of iodide into an organic form. Among these are the thioamides which include thiouracil, thiobarbital, carbimazole, methimazole, and propylthiouracil (Table II). The latter two are the most commonly used today.

TABLE 11.—*Structure of ETU, amitrole, and some antithyroid compounds of the thioamide type formerly and currently used in hyperthyroidism*



Although the exact mechanisms of hormone inhibition are not known for each drug, the net result is that the symptoms characteristic of classic hypothyroidism can be produced by excesses of any of these agents (*62*). ETU is thought to produce antithyroid effects by a similar interference in the conversion of inorganic to organic iodide within the thyroid (*52*).

Freudenthal and co-workers (*64*) fed rats ETU in the diet in amouts of 1, 5, 25, 125, or 625 ppm for 30, 60, or 90 days. Controls were fed 125 ppm propylthiouracil (PTU) or 50 ppm amitrole, amounts known to cause significant antithyroid effects (positive controls), or diet alone. The authors report that only positive controls or rats that received 125 or 625 ppm ETU had measurable alterations in thyroid structure or function.

Rats that received 625 ppm ETU had excessive salivation, loss of hair, scaly skin, 30 to 40 percent reduction of food consumption and reduced weight gain. Controls and other groups fed ETU showed no adverse clinical effects. Biochemical changes included a decrease in iodide uptake in rats fed 625 ppm ETU; decreased concentration of serum triiodothyronine (T_3) and thyroxine (T_4) in rats fed 625 ppm ETU or 125 ppm PTU, as well as increased serum concentrations of thyroid-stimulating hormone in positive controls and rats fed 125 or 625 ppm ETU.

Gross necropsy revealed enlarged, red thyroids in positive controls and rats fed 125 or 625 ppm ETU, and the ratios of thyroid weight to body or brain weight were significantly increased in the latter group.

Microscopic examination revealed thyroid hyperplasia of various degrees in all groups fed 25 ppm ETU or more, but it was less marked than that seen in PTU controls. In rats fed 625 ppm thyroid adenomas were found.

No effects were seen in rats fed 5 ppm; effects of 25 ppm were apparent after 60 days treatment but not after 30 or 90 days.

Although the mechanism by which ETU affects the thyroid is unknown, the fact that the molecular structure of ETU is remarkably similar to that of the thioamides (Table 12) and the fact that in rats ETU has been found to produce symptoms characteristic of reduced thyroid activity similar to those caused by anti-thyroid drugs causes concern that any or all of the symptoms of hypothyroidism might occur to some degree in persons exposed to EDBC's or its metabolite ETU and that the effects of ETU on the thyroid and those caused by anti-thyroid drugs or natural goitrogen are at least additive. Population at particular risk are:

(1) People being treated with anti-thyroid drugs.

(2) People with known sensitivity to antithyroid drugs or other goitrogenic agents.

(3) Women of child-bearing age.

(4) People with "border line" hypothyroidism.

(5) people whose diets are rich in foods that contain natural goiterogens (kale, cabbage, brussel sprouts, turnips, broccoli, rape, and kolhrabi).

B. *Mutagenic effects.*—1. *Maneb.* The frequency of chromosomal aberrations (primarily chromatid breaks) in cultured human lymphocytes treated with maneb (0.5, 15, or 30 μg/ml) was 10 to 20 percent greater than that in controls; but it was not dependent on dosage (*65*). However, when the exposure time was increased to 48 hours, the frequency of chromosomal aberrations in cells treated with 15 μg/ml was 53 percent greater than that in controls.

In rabbits administered a single dose of frequency of chromosomal aberrations in maneb (800 mg/kg) by stomach tube; the treated animals was 7 percent greater than that in controls (*65*). The incidence of aberrations in rabbits given a single, lower dose of maneb (14 mg/kg) did not increase; but the incidence did increase (5 percent more than controls) in rabbits given multiple doses of this amount for 4½ months (*65*).

In mice given a single oral dose of Maneb (100 mg/kg) the frequency of chromosome damage increased 1.3 percent over that in controls (p=.027) (*65*). Mutants in the conidia of *Alternaria mali* were induced by exposure to Maneb (*65*).

2. *Zineb.* In a study of the cultured human lymphocytes from 15 workers employed at different stages of Zineb manufacture, the mean frequency of aberrant metaphases was 6 percent greater than that in controls ($p<.0001$) (*67*). In mice given a single oral dose of Zineb (100 mg/kg) the frequency of chromosome damage in bone marrow cells was almost 1 percent greater than that in controls (*65*). Mutants in the conidia of *Alternaria mali* were induced by exposure to Zineb (*66*).

3. *Ethylenethiourea.* ETU was reported to have weak mutagenic activity in a microbial system (Ames test) used to detect base substitutions (*68*). However, Teramoto and coworkers were unable to confirm this finding with the same microbial strain (*69*). However, they did report a dose-related increase in the mutation rate induced by ETU in another strain which is more sensitive to base substitution mutations.

ETU has much more potent mutagenic activity when nitrosated. In both microbial (without metabolic activation) and mammalian systems, the mutagenic activity of ETU combined with sodium nitrite was dramatically increased (*70*). Presumably N-nitroso ETU is formed.

C. *Skin sensitization.* Documents submitted in support of tolerance requests reported that skin of male guinea pigs to which a 20 percent water suspension of Maneb was applied became sensitized (PP No. 156). EBDC's have long been recognized as irritants of skin and eyes, and statements that contact with eyes and skin is to be avoided are required on pesticide labels. However, skin sensitization, unlike contact dermatitis resulting from skin or eye irritation, can lead to severe toxicologic effects in susceptible individuals (*71*).

Skin sensitization and cross sensitization by EBDC's and ETU were also observed in studies with female guinea pigs. The degree of sensitization caused by ETU was slighter. Cross sensitization to different EBDC's was conspicuous. (*72*).

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07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 000168 WASATCH CHEMICAL DIVISION ENTRADA IND INC
P O BOX 6219
SALT LAKE CITY UT 84106

********** PRODUCT NAME **********

**05784* EBCMB'S FORMULA "F"

REGISTRANT *NAME AND ADDRESS*

* 000239 CHEVRON CHEMICAL COMPANY
CPTHC DIVISION 940 HENSLEY WAY
RICHMOND CA 94804

********** PRODUCT NAME **********

**04157* ORTHO ZINEB WETTABLE

**04225* ORTHO MANEB 80 FUNGICIDE

REGISTRANT *NAME AND ADDRESS*

* 000279 FMC CORP.
AGRICULTURAL CHEM DIV.
100 NIAGARA ST.
MIDDLE PORT NY 14105

********** PRODUCT NAME **********

**03892* ZINEB 75 WETTABLE POWDER

**03893* POLYRAM 80 WP

**03906* ZINEB 75 WETTABLE POWDER

**03992* ZINEB 6 DUST

07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000279

**04036* MANEB & THIODAN 4 DUST

**04971* PCNB 10 ZINEB 10 SOIL TREATER

REGISTRANT *NAME AND ADDRESS*

* 000359 RHODIA INC. AGRICULTURAL DIVISION
P.O. BOX 125
MONMOUTH JUNCTION, NJ 08852

********** PRODUCT NAME **********

**05102* SUPER-FLO MANEB FLOWABLE

REGISTRANT *NAME AND ADDRESS*

* 000557 SWIFT AGRICULTURAL CHEMICAL
CORP.
111 WEST JACKSON BOULEVARD
CHICAGO, IL 60604

********** PRODUCT NAME **********

**07000* SWIFT'S SUPER GUARD 6% DITHANE M-45 DUST

**09593* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.992%)

**09594* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.472%)

**09595* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.678%)

**09596* PAR EX FERTILIZER PLUS ZINC-ION MANEB (3.571%)

**09597* PAR EX FERTILIZER PLUS ZINC-ION MANEB (3.218%)

**09598* PAR EX FERTILIZER PLUS ZINC-ION MANEB (4.591%)

**09599* PAR EX FERTILIZER PLUS ZINC-ION MANEB (5.350%)

07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000557

**096000* PAR EX FERTILIZER PLUS ZINC-ION MANEB (4.017%)

**096001* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.295%)

**096002* PAR EX FERTILIZER PLUS ZINC-ION MANEB (6.828%)

**096003* PAR EX FERTILIZER PLUS ZINC-ION MANEB (8.035%)

**096004* PAR EX FERTILIZER PLUS ZINC-ION MANEB (10.714%)

**096005* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.008%)

**096006* PAR EX FERTILIZER PLUS ZINC-ION MANEB (1.891%)

**096007* PAR EX FERTILIZER PLUS ZINC-ION MANEB (2.143%)

****

REGISTRANT *NAME AND ADDRESS*

* 000635 E-Z FLO CHEMICAL CO.
DIV. OF GROWER SERVICE CORP.
P.O. BOX 608
LANSING, MI 48901

********** PRODUCT NAME **********

**08180* E-Z-FLO DITHANE F-45-STREPTOMYCIN

****

REGISTRANT *NAME AND ADDRESS*

* 000707 ROHM & HAAS COMPANY
INDEPENDENCE MALL
PHILADELPHIA PA 19105

********** PRODUCT NAME **********

**06621* DITHANE Z-78

**07612* FOPP

07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000707

**07613* DITHANE M-22

**07617* DITHANE M-45

**07618* DITHANE M-45

**07621* DITHANE M-45

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REGISTRANT *NAME AND ADDRESS*

* 000829 SOUTHERN AGRI INSECT INC
PO BOX 218
PALMETTO FL 33561

********** PRODUCT NAME **********

**06765* SA-50 HOME AND GARDEN VEGETABLE SPRAY CONCENTRATE

****

REGISTRANT *NAME AND ADDRESS*

* 000909 COOKE LABORATORY PRODUCTS
4759 S DUPREE AVE
PICO RIVERA CA 90660

********** PRODUCT NAME **********

**08642* COOKE FUNGICIDE

**08644* ROSEDALE'S FUNGI-TAC

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7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 000960	BALCOM CHEMICALS INC BOX 667 GREELEY CO 80630

********** PRODUCT NAME **********

**03784* BALCOM DITHANE 6.5 DUST FUNGICIDE

**03828* BALCOM PARATHION 2 DIPEL 320-MANEB 5 DUST

REGISTRANT	*NAME AND ADDRESS*
* 001202	PUREGRO COMPANY 1052 W 6TH ST LOS ANGELES CA 90017

********** PRODUCT NAME **********

**08999* PUREGRO BTP ZINEB 2-5 DUST

**05002* PUREGRO MANEB PARATHION 5.6-2 DUST

**05007* PUREGRO PARATHION ZINEB 2-5 DUST

**05046* PUREGRO PHOSDRIN M-JK DUST 1-3.2

**05059* PUREGRO MANEB SULFUR 5.6-50 DUST

**05100* PUREGRO DITHANE A-40

**** PRODUCT SEARCH LISTING **** PAGE 6

7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 001526	A G CHEM-CHEM DIST ARIZONA AGROCHEMICAL CO. P.O. BOX 21537 PHOENIX AZ 85036

********** PRODUCT NAME **********

**03802* AGRO-CHEM BRAND MANEB 5

REGISTRANT	*NAME AND ADDRESS*
* 001812	GRIFFIN CORP. P.O. BOX 1847 VALDOSTA, GA 31601

********** PRODUCT NAME **********

**03881* METHOZIN TABACCO DUST

**05433* METHOZON TOBACCO DUST

REGISTRANT	*NAME AND ADDRESS*
* 001871	FARMCRAFT, INC 8900 S W COMMERCIAL TIGARD OR 97223

********** PRODUCT NAME **********

**08926* FARMCRAFT ZINEB 6 DUST

**08934* FARMCRAFT MANEB 6-THIODAN 3 DUST

**08944* FARMCRAFT MANEB 6-SEVIN 5 DUST

**08969* FARMCRAFT MANEB 6 DUST

****

REGISTRANT *NAME AND ADDRESS*

* 001969 PARSONS CHEMICAL
BOX 146
GRAND LEDGE MI 48837

********** PRODUCT NAME **********

**003002* PARSONS SEED SAVER-DB

****

REGISTRANT *NAME AND ADDRESS*

* 002935 WILBUR ELLIS CO.
P. O. BOX 1286
FRESNO, CA 93715

********** PRODUCT NAME **********

**006578* RED-TOP ZINEB 15 DUST

**006579* RED-TOP PHOSDRIN 2 ZINEB 10 DUST

**006649* RED-TOP MANEB 8 DUST

**006684* RED-TOP THIODAN 3 TOXAPHENE 15 ZINEB 9 DUST

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REGISTRANT *NAME AND ADDRESS*

* 003122 SUPERIOR FERTILIZER & CHEM COMPANY ATTN R BASS
BOX 1029
TAMPA FL 33600

********** PRODUCT NAME **********

**007206* SOUTHERN TABACCO DUST DITHANE Z-78 DUST 15%

**007207* SOUTHERN TOBACCO DUST DITHANE Z-78 DUST 7.5%

**CONTINUE REGISTRANT 003122

**007268* SOUTHERN TOBACCO DUST 2.50% LANNATE-6.50% DITHANE Z-78

**007277* SOUTHERN TOBACCO DUST 2.25% METHOMYL-6.50% DITHANE Z-78

**007500* TOBACCO DUST 1% PARATHION - 3% THIODAN - 6.50% DITHANE Z-78

**007501* SO. TOBACCO DUST 1% PARATHION-3% THIODAN-7.50% DITHANE Z-78

**007502* SOTHERN TOBACCO DUST 1% PARATHION-3% THIODAN-15% DITHANE Z-78

**007504* SOUTHERN TOBACCO DUST 2% PARATHION-3% THIODAN-13.50% DITHANE Z-78

**007505* TOBACCO DUST 2% PARATHION-3% THIODAN-6.50% DITHANE Z-78

**007506* TOBACCO DUST 2% PARATHION - 4% THIODAN - 13.5% DITHANE Z-78

**007507* SOUTHERN TOBACCO DUST 2% PARATHION-3% THIODAN-15% DITHANE Z-78

**007550* 2% PARATHION-4% THIODAN-10% ZINEB DUST

**007551* 2% PARATHION-10% TOXAPHENE-6.50% ZINEB DUST

**007553* SUPERIOR'S 2% PARATHION - 6.50% ZINEB DUST

**007556* 10% SEVIN - 10% DITHANE Z-78 DUST

**007559* ZINEB 6.50% DUST

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REGISTRANT *NAME AND ADDRESS*

* 003239 AGRICO CHEMICAL CO.
CROP PROTECTION CHEMICAL DIV.
BOX 3051
TULSA, OK 74101

********** PRODUCT NAME **********

**008983* STANDARD FORE (R) POST AND GARDEN FUNGICIDE

**008996* STANDARD TOMATO & VEGETABLE DUST

**008997* STANDARD ZINEB 75 W GARDEN FUNGICIDE

**009081* STANDARD BRAND ZINEB 15% DUST

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7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING FBCD

**CONTINUE REGISTRANT 003238

**009146* MICRO-FLO P M Z AGRICULTURAL FUNGICIDE

**009149* MICRO-FLO S-Z

**010165* STANDARD BRAND LAWN & TURF FUNGICIDE

**010166* STANDARD FORMAD LAWN & TURF FUNGICIDE

REGISTRANT *NAME AND ADDRESS*

* 003286 FERD STAFFEL CO.
P.O. BOX 2380
SAN ANTONIO TX 78298

********** PRODUCT NAME **********

**008045* STAFFEL'S FORE LAWN AND ORNAMENTAL FUNGICIDE

**008062* STAFFEL'S SPECIAL VEGETABLE DUST

**008069* STAFFEL'S DITHANE Z-78- ZINEB* FUNGICIDE

REGISTRANT *NAME AND ADDRESS*

* 003468 SCHALL CHEMICAL INC
PO X 862
MONTEVISTA CO 81144

********** PRODUCT NAME **********

**004563* DIMETHOATE-MANEB-SULFUR

**004597* POLYRAM POTATO SEED TREATER WITH BARK

**004598* POTATO SEED TREATER WITH BARK

**** PRODUCT SEARCH LISTING **** PAGE 10

7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING FBCD

REGISTRANT *NAME AND ADDRESS*

* 005431 PARKHURST FARM & GARDEN SUPPLY
310 N WHITE HORSE PIKE
HAMMONTON NJ 08037

********** PRODUCT NAME **********

**007221* LEDDEN NEW BUG BLITE OUT DUST

**007225* PARKHURST'S NEW BUG BLITE OUT DUST

REGISTRANT *NAME AND ADDRESS*

* 005779 GRO CHEMICAL COMPANY
3530 NW 31ST ST
MIAMI FL 33142

********** PRODUCT NAME **********

**003298* TOMATO VEGETABLE DUST

REGISTRANT *NAME AND ADDRESS*

* 005906 HELENA CHEMICAL CO
CLARK TOWER, 5100 POPLAR AVE, SUITE 2924
MEMPHIS TN 38137

********** PRODUCT NAME **********

**007062* 75% ZINEB

**007573* HELENA BRAND MANEB FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 005967	MOYER CHEMICAL COMPANY BOX 945 SAN JOSE CA 95108

********** PRODUCT NAME **********
**05136* MANEB DUST NO. 5-6
**05137* MANEB-SULFUR DUST NO. 5.6-50
**05138* MANZEB 80-2

REGISTRANT	*NAME AND ADDRESS*
* 006023	STOKER COMPANY P.O. BOX 2010 EL CENTRO CA 92243

********** PRODUCT NAME **********
**03035* STOKER MALATHION-Z DUST NO 5-10
**03036* STOKER Z DUST NO.5
**03039* STOKER PERTHANE-Z DUST NO.10-5
**03042* DITHANE M-22 DUST NO.6
**03043* DITHANE M-45 DUST NO.6
**03054* STOKER Z-CRYOLITE DUST NO.5-50
**03057* STOKER MALATHION-Z DUST NO.5-5

REGISTRANT	*NAME AND ADDRESS*
* 006721	SOUTHERN HILL CREEK PRODUCTS COMPANY INC BOX 1096 TAMPA FL 33601

********** PRODUCT NAME **********
**03355* SMCP ZINEB 75-W

REGISTRANT	*NAME AND ADDRESS*
* 006926	POOL CARL LABS INC 1133 E MISSOURI AVE ELMENDORF TX 78112

********** PRODUCT NAME **********
**03340* CARL POOL ZINEB GARDEN FUNGICIDE
**06166* CARL POOL ROSE BLACK SPOT SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 026973	SOILSERV INC PO BOX 1847 SALINAS CA 93901

********** PRODUCT NAME **********
**03560* SOILSERV MANEB 56 DUST
**03562* SOILSERV METAPHOS MANEB 2-8 DUST
**03563* SOILSERV METAPHOS-MANEB 4-8 DUST
**03569* SOILSERV METAPHOS ZINEB 2-8 DUST

7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 006973

**03593* MANEB 80 FUNGICIDE

**04409* SILSERV ZEBD-SULFUR 5-15

**04409* SOILSERV ZEBD-PHOSPHIN 52 DUST

**04410* SOILSERV ZEBD-SULFUR 5-40

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REGISTRANT *NAME AND ADDRESS*

* 007001 OCCIDENTAL CHEMICAL CO
P O BOX 198
LATHROP, CA 95330

********** PRODUCT NAME **********

**07705* MALATHION MANEB SULFUR 4-6-10 DUST

**07706* METHYL PARATHION THIODAN-MANEB 2-2-6 DUST

**07752* ZINC-CO-SUL

**07756* MANEB 6 DUST

**07772* MANEB SULFUR 6-25 DUST

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REGISTRANT *NAME AND ADDRESS*

* 007804 NULIFE FERTILIZERS DIV OF HYGRADE FOOD PRODUCTS
CORP PO BOX 883
TACOMA WA 98401

********** PRODUCT NAME **********

**06535* NULIFE 10-1-4 WITH FORE

7/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

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REGISTRANT *NAME AND ADDRESS*

* 007478 CHEM PAK COMPANY
10402 S. W. 186TH TERRACE
SOUTH MAIMI FL 33157

********** PRODUCT NAME **********

**07983* TOMATO DUST

**07993* ROSE FUNGICIDE SPRAY

**08002* FLORIDA CITRUS SPRAY WET.

**08009* MANEB

**08013* LEAFY VEGETABLE DUST

**08019* ORCHID FUNGICIDE WETTABLE

**08020* FORE

**08022* ZINEB FUNGICIDE

**08035* FLORIDA VEGETABLE DUST

**08036* FLORIDA TOMATO AND VEGETABLE SPRAY

**08818* GARDENS OF THE SOUTH ROSE DUST

**08821* ROSE & POINSETTIA SPRAY

**08823* GARDENS OF THE SOUTH ROSE SPRAY

**08824* ROSE DUST

40834

NOTICES

REGISTRANT *NAME AND ADDRESS*

* 007720 TAYLOR JOHN FERTILIZER COMPANY
PO BOX 15289
SACRAMENTO CA 95804

********** PRODUCT NAME **********

**04632* JOHN TAYLOR CHEMICALS ZINEB 3% DUST

**06068* JOHN TAYLOR CHEMICALS MANEB-SEVIN-SULFUR 6-7.5-50 DUST

**06069* JOHN TAYLOR CHEMICALS MANEB 6-DUST

**06072* JOHN TAYLOR CHEMICALS MANEB-SULFUR 6-50 DUST

REGISTRANT *NAME AND ADDRESS*

* 008278 METRO BIOLOGICAL LAB
8241 GAY ST
CYPRESS CA 90630

********** PRODUCT NAME **********

**10167* METRO DITHANE M-45

REGISTRANT *NAME AND ADDRESS*

* 008434 DOTSON & SONS INC
BOX 173
BRAWLEY CA 92227

********** PRODUCT NAME **********

**04717* DOT-SON BRAND 4-10-2-2 DUST

REGISTRANT *NAME AND ADDRESS*

* 009160 SEMINOLE STORES INC
P O BOX 940
OCALA FL

********** PRODUCT NAME **********

**05225* MARICO BRAND 6% ZINEB DUST

**05292* MARICO BRAND SEVIN & MANEB #5-8

**05295* MARICO BRAND 8% MANEB DUST

**07524* MARICO BRAND SEVIN & ZINEB DUST #5-6

**09456* LINDANE & MANEB DUST #2-5

REGISTRANT *NAME AND ADDRESS*

* 009404 CHASE & COMPANY
BOX 1697
SANFORD FL 32771

********** PRODUCT NAME **********

**03476* SUNNILAND FUNGICILE CONTAINS DITHANE M-45 FILE SYMB: 9404-UT

**03479* SUNNILAND ZINEB 75 FILE SYMBOL: 9404

REGISTRANT *NAME AND ADDRESS*

* 009782 WOODBURY CHEMICAL COMPANY
PO BOX 4239
PRINCETON FL 33032

********** PRODUCT NAME **********

**CONTINUE REGISTRANT 009782

**03633* MANEB 8-W FUNGICIDE

**03634* MANEB-SULFUR 3.2-70 DUST

**03635* MANEB 3.2 DUST

**03638* MANEB-PARATHION-SULFUR 3.2-2-80DUST

**03651* POTATO SEED-PIECE FUNGICIDE DUST

**06193* MANEB-SULFUR 5.6-80 DUST

REGISTRANT *NAME AND ADDRESS*

* 010226 ROCKWOOD CHEM COMPANY
BOX 34
BRAWLEY CA 92227

********** PRODUCT NAME **********

**03748* ROCKWOOD BRAND MANEB ZINEB CRYOLITE 3-3-50

REGISTRANT *NAME AND ADDRESS*

* 010371 CAPE CHEMICAL COMPANY
33 N FREDERICK
CAPE GIRARDEAU MO 63701

********** PRODUCT NAME **********

**07405* BEAN VEGETABLE DUST

**07406* ALL PURPOSE SPRAY

REGISTRANT *NAME AND ADDRESS*

* 010972 CASTLE & COOKE INC
PO BOX 877
MORGAN HILL CA 95037

********** PRODUCT NAME **********

**06307* CASTLE BRAND DUST MANEB S-5.6-50

**06308* CASTLE BRAND CUCUMBER DUST

**06544* CASTLE BRAND DUST DIAZINON MANEB 3-4

**07028* CASTLE BRAND DUST MANEB 5.6

**07029* CASTLE BRAND DUST SEVIN-BACOP-MAEB-S 5-5-4-50

**07148* CASTLE BRAND DUST DIAZINON MANEB S-2-4-20

**07149* CASTLE BRAND DUST BACOP-MNZE-S 5-4-50

**08689* CASTLE BRAND DUST BHC-2 G-THION MANEB 2-5.6

REGISTRANT *NAME AND ADDRESS*

* 011093 MASTER NURSERYMEN'S ASSN C/O LEO DUPUICH
3620 1/2 MT DIABLO BLVD
LAFAYETTE CA 94549

********** PRODUCT NAME **********

**07370* 49'ER BRAND ROSE DUST

**07371* 49'ER BRAND FUNGICIDE

REGISTRANT *NAME AND ADDRESS*

* 011149 RIVERSIDE FERTILIZER WORKS
PO BOX 232
RIVERSIDE CA 92502

********** PRODUCT NAME **********

**04665* POTATO SEED TREATER 6.4% DUST WITH GYPSUM

REGISTRANT *NAME AND ADDRESS*

* 011169 SAN JOAQUIN SULPHUR COMPANY
PO BOX 127
IODI CA 95240

********** PRODUCT NAME **********

**04599* VALOR BRAND PRODUCTS MANEB DUST

**04600* VALOR BRAND PRODUCTS MANEB-SULPHUR-DUST

**04601* VALOR BRAND PRODUCTS DITHANE M-45-S DUST

REGISTRANT *NAME AND ADDRESS*

* 011315 FLORIDA EAST COAST FERTILIZER COMPANY
305 SOUTH FLAGLER AVE-DRAWER 8
HOMESTEAD FL 33030

********** PRODUCT NAME **********

**05418* ANTI-DAMP

REGISTRANT *NAME AND ADDRESS*

* 011369 BAKERSFIELD AG CHEM INC
PO BOX 5062
OILDALE CA 93308

********** PRODUCT NAME **********

**08782* BAC 80? POTATO SEED TREATER

**08813* BAC 8-.01 POTATO SEED TREATER

REGISTRANT *NAME AND ADDRESS*

* 011476 VALLEY CHEMICAL CORP OF CALIFORNIA
PO BOX 1509
EL CENTRO CA 92243

********** PRODUCT NAME **********

**03409* VALLEY BRAND Z-M DUST

REGISTRANT *NAME AND ADDRESS*

* 011656 WESTERN FARM SERVICE INC SHELL CHEM COMPANY
1025 CONNECTICUT AVE-STE 200
WASH DC 20036

********** PRODUCT NAME **********

**05721* *DITHANE M-45 - 8% DUST

**05724* M-PARA MANEB 2-5

05727* ETB - *METHONYLMANEB-144M*-2-5

**05731* METHONYL MANEB 2-5

REGISTRANT	*NAME AND ADDRESS*
* 014775	ASGROW FLORIDA COMPANY PO DRAWER D PLANT CITY FL 33566

********** PRODUCT NAME **********
**08727* PARATHION-ZINEB DUST NO.3 (2% PARATHION-6% ZINEB) EM-3
**08731* ENDOSULFAN-ZINEB DUST NO.1 (3% THIODAN-6% ZINEB) (THM-1)
**08733* DITHANE M-45 DUST NO. 1 (M45-1)
**08734* DITHANE POTATO SEED TREATER (M45-2)
**08738* PARATHION-MANEB-SULPHUR DUST NO. 3 (EMAS-3)
**08744* ZINEB DUST NO. 2 (6% ZINEB) (M-2)
**10560* COPPER-DITHANE M-45 DUST NO1 (CM45-1)
**10561* MANEB-KILCOP DUST NO.4 (MAC-4)

REGISTRANT	*NAME AND ADDRESS*
* 014782	CAPUSO FARM SUPPLY 120 N WHITE HORSE PIKE HAMMONTON NJ 08037

********** PRODUCT NAME **********
**03209* 6% M-45 DUST
**03202* 6% M-45 DUST
**03203* 6% M-45 DUST
**10334* ZOLATO DUST

REGISTRANT	*NAME AND ADDRESS*
* 021275	SPAULDING INC 1921 5TH AVE S ST PETERSBURG FL 33733

********** PRODUCT NAME **********
**05539* X-CEL FORE
**05541* X-CEL GARD-M-DUST
**05549* X-CEL ZINEB

REGISTRANT	*NAME AND ADDRESS*
* 031143	SMITH COMPANY OF UVALDE P O BOX 1000 UVALDE TX 78801

********** PRODUCT NAME **********
**04466* CROP-LIFE DITHANE* M-45 5.6 DUST

REGISTRANT	*NAME AND ADDRESS*
* 033914	DIXIE AGRICULTURAL CHEM. CO P O BOX 1227 EUSTIS, FL 32726

********** PRODUCT NAME **********
**07412* FLOWABLE MANEB
**07413* DIXIE FLOWABLE ZINEB

07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 034164	AMERICAN REFINING & MFG. CO P O BOX 352 MIAMI, FL 33147

********** PRODUCT NAME **********

**039260* KROMEX

REGISTRANT	*NAME AND ADDRESS*
* 034306	HI ACRES FERTILIZER DIVISION P O BOX 638 GROVELAND, FL 32736

********** PRODUCT NAME **********

**040671* HI-ACRES ZINEB WETTABLE POWDER

REGISTRANT	*NAME AND ADDRESS*
* 035052	GARDEN EXCHANGE LTD 62 KILAUEA AVENUE HILO, HI 96720

********** PRODUCT NAME **********

**054720* GX MANEB D

07/28/77 APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 035222	SOUTHERN CHEMICALS, INC. 204 N. ELM AVE, BOX 1486 SANFORD, FL 32771

********** PRODUCT NAME **********

**071171* SOUTHERN'S MANEB PARATHION SULFUR DUST 4-2-70

**071175* TURF FUNGICIDE

**071179* CAMARAN WETTABLE POWDER

REGISTRANT	*NAME AND ADDRESS*
* 037351	COLORADO CHEMICAL & FERT. CO, INC. ROUTE 1, BOX 2548 LONGMONT, CO 80501

********** PRODUCT NAME **********

**009857* COLORADO'S CWB SOIL BUILDER WITH FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 037601	MARICO, INC PO BOX 940 OCALA, FL 32670

********** PRODUCT NAME **********

**103731* PARATHION, SEVIN & ZINEB (2-5-6)

**** PRODUCT SEARCH LISTING ****

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APPLICANTS FOR REGISTRATION OF PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 037832	RATHBUN CHEMICALS, INC. BOX 91 YUMA, AZ 85364

********** PRODUCT NAME **********

**08359* ZINEB 5 DUST

REGISTRANT	*NAME AND ADDRESS*
* 037843	UNIVERSITY OF HAWAII-CO-OP EXTENSION SERV-ENTOMOLOGY BRANCH HONOLULU, HI 96822

********** PRODUCT NAME **********

**08531* MANEB (WETTABLE POWDER)

**08567* ZINEB

REGISTRANT	*NAME AND ADDRESS*
* 038655	N.Y.S. COLLEGE OF AGRICULTURE & LIFE SCIENCES CORNELL UNIV. ITHACA, NY 14853

********** PRODUCT NAME **********

**10950* NYS-DEWEY-ZINEB

REGISTRANT	*NAME AND ADDRESS*
* 000004	BONIDE CHEMICAL CO. INC. 2 WURZ AVE. YORKVILLE NY 13495

********** PRODUCT NAME **********
**000161* BONIDE LAWN FUNGICIDE
**000175* BONIDE TOMATO VEGETABLE DUST
**000197* BONIDE TOMATO-POTATO DUST

REGISTRANT	*NAME AND ADDRESS*
* 000316	DRAGON CHEMICAL CORP PO BOX 7311 ROANOKE VA 24019

********** PRODUCT NAME **********
**000024* NEW DRAGON TOMATO DUST
**000089* DRAGON TOMATO & VEGETABLE DUST

REGISTRANT	*NAME AND ADDRESS*
* 000070	RIGO COMPANY, INC. 1200 FORT WAYNE NAT'L BANK BLDG. FORT WAYNE, IN 46802

********** PRODUCT NAME **********
**000162* KILL-KO 3 IN 1 GARDEN DUST
**000173* KILL KO TOMATO DUST

REGISTRANT	*NAME AND ADDRESS*
* 000072	MILLER CHEMICAL & FERTILIZER CORP BOX 333 HANOVER PA 17331

********** PRODUCT NAME **********
**000334* MILLER 15% ZINEB DUST
**000588* MILLER POTATO SEED-BEACH FUNGICIDE DUST
**000566* ZINEB 75% WETTABLE POWER

REGISTRANT	*NAME AND ADDRESS*
* 000108	RALEIGH & C COMPANY 223 E MAIN ST FREEPORT IL 61032

********** PRODUCT NAME **********
**000050* RALEIGH INSECT DUST NO. 3

REGISTRANT	*NAME AND ADDRESS*
* 000148	THOMPSON-HAYWARD CHEMICAL COMPANY BOX 2383 KANSAS CITY KS 66110

********** PRODUCT NAME **********
**000732* DE PESTER MANEB COPPER SULFUR 4-5-15
**000749* DE-PESTER THIRAM-MANEB 3-3-6
**000807* DE-PESTER DIAZINON-MANEB 2-4

**CONTINUE REGISTRANT 000146

**001076* T-H FLORIDA SHADE DUST 10 ZINEB

**001077* T-H FLORIDA SHADE DUST 1-3-10

**001083* T-H POLYRAM 5 SEVIN 5 DUST FUNGICIDE INSECTICIDE

**001084* T-H POLYRAM 5 DUST FUNGICIDE

**001085* T-H DITHANE M-45 POTATO-SEED PIECE FUNGICIDE DUST

**001086* T-H MANEB FUNGICIDE DUST (CONTAINS 6.4% MANEB)

**001089* T-H POLYRAM 5 ECBO DUST (WITH BORAX)

**001090* T-H FLORIDA SHADE DUST 2-3-10 CONT 2% PAR 3% THIODAN-6.5% ZINEB

**001091* T-H FLORIDA SHADE DUST 2-3-20 CONT 2% PAR-3% THIODAN-13% ZINEB

**001092* T-H FLORIDA SHADE DUST 1-3-20 CONT 1% PAR 3% THIODAN 13% ZINEB

**001093* T-H FLORIDA SHADE DUST 2-4-10

**001094* T-H POLYRAM 5 SEVIN 10 DUST FUNGICIDE-INSECTICIDE

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REGISTRANT *NAME AND ADDRESS*

* 000168 WASATCH CHEMICAL DIVISION ENTRADA IND INC
P O BOX 6219
SALT LAKE CITY UT 84106

********** PRODUCT NAME **********

**000078* MORGRO ROSE & FLOWER DUST

**000388* WASCO POTATO SEED-PIECE FUNGICIDE DUST (CONTAINS DITHANE M-45)

**000389* MORGRO ROSE DUST INSECTICIDE MITICIDE FUNGICIDE

**000416* MORGRO SOIL AND BULB DUST INSECTICIDE FUNGICIDE MITICIDE

**000824* WASCO 6% DITHANE M-45 DUST

**CONTINUE REGISTRANT 000168

**000462* MORGRO FORT

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REGISTRANT *NAME AND ADDRESS*

* 000192 DEXOL INDUSTRIES
1459 W 228TH ST
TORRANCE CA 90501

********** PRODUCT NAME **********

**001159* DEXOL ROSE AND FLOWER DUST

**001421* DEXOL TOMATO AND VEGETABLE DUST

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REGISTRANT *NAME AND ADDRESS*

* 000264 TOBACCO STATES CHEMICAL COMPANY
BOX 479
LEXINGTON KY 40501

********** PRODUCT NAME **********

**000021* TOBACCO STATES BRAND 75% ZINEB WP

**000135* 8-1 CUKE DUST

**000188* TOBACCO STATES BRAND IMPROVED D & I DUST

**000190* TOBACCO STATES BRAND MANEB 80 WITH ZINC ADDED 20% WETTABLE POWDER

**000196* TOBACCO STATES BRAND ROSE DUST

**000216* TOBACCO STATES BRAND TOMATO MULTI-PURPOSE DUST

REGISTRANT *NAME AND ADDRESS*

* 000237 MUSHROOM SPLY COMPANY
TOUGHKENAMON PA 19374

********** PRODUCT NAME **********

**00009* MSCO NO. 45 X MUSHROOM ZINEB DUST

REGISTRANT *NAME AND ADDRESS*

* 000239 CHEVRON CHEMICAL COMPANY
ORTHO DIVISION 940 HENSLEY WAY
RICHMOND CA 94804

********** PRODUCT NAME **********

**00556* ORTHO NABAM LIQUID SPRAY PROD NO 1525

**00623* ORTHO ZINEB WETTABLE

**01296* ORTHO (P) ZINEB 5 DUST

**01800* ORTHO CUSTOM BLEND NO. 51

**01880* ORTHO MANEB 80 FUNGICIDE

**02324* ORTHO TOMATO AND POTATO DUST

**02405* ORTHOCIDE-MANEB 20-30 SEED PROTECTANT

REGISTRANT *NAME AND ADDRESS*

* 000240 DALY HERRING COMPANY
PO BOX 428
KINSTON NC 28501

********** PRODUCT NAME **********

**00117* D-H POLYRAM 3.5 DUST FUNGICIDE

**00201* 20% TOXAPHENE-2% PARATHION 3.9% ZINEB DUST

REGISTRANT *NAME AND ADDRESS*

* 000279 FMC CORP.
AGRICULTURAL CHEM DIV.
100 NIAGARA ST.
MIDDLE PORT NY 14105

********** PRODUCT NAME **********

**00572* ZINEB 6.5 DUST

**00657* NIAGARA ZINEB 16.25 DUST CODE 674

**00827* NIAGARA NABAM SOLUTION CODE 717

**01168* NIAGARA ZINEB 15 MUSHROOM DUST CODE 1295

**01387* NIAGARA ZINEB 75 W. P., CODE 836

**01427* NIAGARA (P) FD ZINEB 16-25 DUST

**01476* NIAGARA MANEB 5.6 PARATHION 2 DUST

**01486* NIAGARA MANEB 5.6 DUST

**01509* NIAGARA SULPHUR MANEB 3.5 DUST FUNGICIDE

**01583* NIAGARA NIACIDE M4 PARATHION 1.5 ZINEB 4 DUST

**01600* THIODAN 3 ZINEB 4 DUST

**CONTINUE REGISTRANT 000279

**01626* NIAGARA MANEB 5.6 THIODAN 3 DUST
**01837* ZINEB 16.25 MALATHION 4 SEVIN 5 TOBACCO DUST
**01863* NIAGARA ZINEB 85% DUST BASE CODE 1518
**01926* NIAGARA ZINEB 16.25 PARATHION 1 SEVIN 5 TOBACCO DUST (CODE 2232)
**01973* NIAGARA ZINEB 4.5 SEVIN 4 DUST CODE 2283
**01997* NIAGARA MANEB 8 SEVIN 10 DUST
**02004* NIAGARA ZINEB 19.5 TOBACCO DUST FUNGICIDE CODE: 1534
**02032* POLYRAM 80 WP FUNGICIDE CODE 2309
**02118* NIAGARA ZINEB 19.50 PARATHION 1 TOBACCO DUST
**02135* NIAGARA ZINEB 6.5 SEVIN 5 DUST FUNGICIDE-INSECTICIDE
**02176* NIAGARA MANEB 8 THIODAN 3 DUST
**02222* NIAGARA PCNB10 ZINEB 10 SOIL TREATER
**02369* NIAGARA MANEB 80 WP CODE 2654
**02379* POLYRAM PCTATC SEED TREATER FUNGICIDE
**02381* NIAGARA MANEB 8 THIODAN 4 DUST
**02395* NIAGARA FD-10-1 THIODAN 3 TOBACCO DUST
**02514* NIAGARA POLYRAM 80 DUST BASE
**02579* FD THIODAN 3 PARATHION 2 ZINEB 13 TOBACCO DUST
**02664* ZINEB 5 DIAZINON 3 DUST CODE 30051
**02676* POLYRAM 3.5 SULFUR 60 SEVIN 5 PEANUT DUST
**02681* NIAGARA FD ZINEB 6.5 PARATHION 2 THIODAN 4 TOBACCO DUST CODE: 20429
**02728* FD THIODAN 3 PARATHION 2 ZINEB 6.5 TOBACCO DUST CODE 20383
**02745* POLYRAM 53.5% SEED TREATER
**02793* NIAGARA POLYRAM 7 DUST FUNGICIDE

**CONTINUE REGISTRANT 000279

**02798* ZINEB 16.25 PARATHION 1 DUST
**02804* MANEB 4 SULFUR 63 THIODAN 3 DUST
**02808* ZINEB 13 METHYL PARATHION 2 THIODAN 4 TOBACCO DUST
**02849* SULFUR 50 ZINEB 4 THIODAN 3 DUST
**02878* ZINEB 6.5 PHOS KIL 1.0 DUST
**02879* ZINEB 6 PHOS KIL 2 DUST CODE 20132
**02899* MANEB 3.5 SULFUR 50 TOXAPHENE 5 DUST CODE 20028
**02902* ZINEB 13 MALATHION 4 SEVIN 5 TOBACCO DUST
**02919* ZINEB 3.9 THIODAN 3 DUST
**02921* ZINEB 6 DUST
**02927* SULFUR 50 ZINEB 4 THIODAN 3 DUST CODE 20027
**02967* TERRACLOR 5 ZINEB 2/5 TRIMET 5 COATED GRANULES

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REGISTRANT *NAME AND ADDRESS*

* 000337 LESTER LABS INC
2370 LAWRENCE ST EAST POINT BRANCH
ATLANTA GA 30344

********** PRODUCT NAME **********

**00058* LESTER-30

REGISTRANT	*NAME AND ADDRESS*
* 000343	CASTLE CHEMICAL COMPANY 301 MASTER AVE SAVAGE MN 55378

********** PRODUCT NAME **********

**00015* COVER-UP GRAIN SEED PROTECTANT

**00020* CASTLE COVER-UP-PLUS

REGISTRANT	*NAME AND ADDRESS*
* 000352	E. I. DUPONT DE NEMOURS COMPANY LEGAL DEPT. D7045 WILMINGTON, DE 19898

********** PRODUCT NAME **********

**00173* DU PONT MANZATE

**00291* DU PONT MANZATE D MANEB FUNGICIDE

**00306* DU PONT MANZATE T MANEB FUNGICIDE

**00341* DU PONT MANZATE 200 FUNGICIDE

**00343* DU PONT TERSAN LSR TURF FUNGICIDE

**00348* DU PONT MANEB 80W

REGISTRANT	*NAME AND ADDRESS*
* 000400	UNIROYAL CHEMICAL DIV UNIROYAL INC AMITY ROAD BETHANY CT 06525

********** PRODUCT NAME **********

**00119* THIOSTAT-BH 1515

**00121* THIOSTAT BH5545

**00122* THIOSTAT-H

**00123* THIOSTAT-HB5743

REGISTRANT	*NAME AND ADDRESS*
* 000404	MCCONNON & COMPANY 25 MCCONNON ROAD WINONA MN 55987

********** PRODUCT NAME **********

**00326* MCCONNON POTATO & TOMATO DUST

REGISTRANT	*NAME AND ADDRESS*
* 000407	IMPERIAL INC BOX 423 SHENANDOAH IA 51601

********** PRODUCT NAME **********

**00293* IMPERIAL TOMATO DUST FOR DISEASE & INSECT CONTROL

**00295* IMPERIAL GLADIOLUS DUST FOR INSECT & DISEASE CONTROL

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000407

**00298* IMPERIAL ZINEB 75W FUNGICIDE FOR FLOWERS,GARDEN & ORCHARD
**00312* IMPERIAL GARDEN DUST
**00319* IMPERIAL MANEB FUNGICIDE
**00380* IMPERIAL MULTI-PURPOSE SPRAY WETTABLE POWDER
**00388* IMPERIAL TOMATO, EGGPLANT AND PEPPER DUST
**00389* IMPERIAL TOMATO GARD WETTABLE POWDER
**00390* IMPERIAL 8% ZINEB DUST
**00391* IMPERIAL SEED POTATO TREATMENT

REGISTRANT *NAME AND ADDRESS*

* 000419 CENOL COMPANY
DIV OF BURGESS VIBROCRAFTERS INC
P O BOX 177 ROUTE 45 & PETERSON RD
LIBERTYVILLE, IL 60048

********** PRODUCT NAME **********

**00165* ROSE DUST BY CENOL

REGISTRANT *NAME AND ADDRESS*

* 000449 TECHNE CORPORATION
C/O REGULATORY AFFAIRS DEPT, FARMLAND IND., INC.
P. O. BOX 7305
KANSAS CITY, MO 64116

********** PRODUCT NAME **********

**00251* ZINEB GARDEN FUNGICIDE
**00431* ZINEB 75-W

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000449

**00469* SURE DEATH BRAND MANEB
**00493* 85% ZINEB DUST BASE
**00494* 75% ZINEB DUST BASE
**00495* 80% ZINEB DUST BASE
**00523* G.O.F. GARDNE SPRAY WETTABLE POWDER

REGISTRANT *NAME AND ADDRESS*

* 000456 CHEMICAL FORMULATORS INC
BOX 26
NITRO, WV 25143

********** PRODUCT NAME **********

**00087* CHEMFORM BRAND MANEB FUNGICIDE
**00090* CHEMFORM BRAND ROSE AND FLORAL DUST

REGISTRANT *NAME AND ADDRESS*

* 000468 GURNEY SEED & NURSERY COMPANY
YANKTON SD 57078

********** PRODUCT NAME **********

**00004* GURNEY'S APPLE CEDAR RUST SPRAY
**00016* GURNEY'S FAMOUS COMBINATION BUG DUST WITH 3 WAY ACTION

REGISTRANT *NAME AND ADDRESS*

* 000471 FIELD HENRY SEED & NURSERY
807 SYCAMORE ST
SHENANDOAH IA 51601

********** PRODUCT NAME **********

**000009* HENRY FIELD S GLADIOLUS AND BULB DUST FUNGICIDE INSECTICIDE

**000011* HENRY FIELD'S TOBATC DUST

**000024* HENRY FIELD'S NEW IMPROVED BUG DUST

REGISTRANT *NAME AND ADDRESS*

* 000476 STAUFFER CHEMICAL COMPANY LABELING & REGISTRATION
DEPT 1200 SOUTH 47TH ST
RICHMOND, CA 94804

********** PRODUCT NAME **********

**001079* MANEB 5.6 DUST

**001166* ZINEB 5 DUST

**001333* MANEB 8 DUST

**001431* ZINEB 75-W

**002079* CAPTAN-MANEB 30-30 SEED PROTECTANT

**002081* CAPTAN-MANEB 37.5-37.5 SEED PROTECTANT

**002082* CAPTAN-HCB-MANEB 20-20-20 SEED PROTECTANT

**002088* CAPTAN-MANEB 37.5-37.5 PEANUT SEED PROTECTANT

**002090* CAPTAN-MANEB 10-35 SEED PROTECTANT

**002091* MANEB 35% SEED PROTECTANT

REGISTRANT *NAME AND ADDRESS*

* 000477 GRO ALL INC
DIV OF CENTRAL CHEM CORP
P. O. BOX 918
HAGERSTOWN, MD 21740

********** PRODUCT NAME **********

**000202* FARMRITE 15% ZINEB DUST

**000259* FARMRITE 5.6% MANEB DUST

**000262* FARMRITE POTATO SEED TREATER (CONTAINS POLYRAM)

**000268* FARMRITE POTATO SEED DUST (CONTAINS DITHANE M-45)

**000280* FARMRITE POTATO SEED FUNGICIDE (CONTAINS MANZATE 200)

REGISTRANT *NAME AND ADDRESS*

* 000539 SEARS ROEBUCK & COMPANY
SEARS TOWER DEPT. 766/68TH FLOOR
CHICAGO IL 60684

********** PRODUCT NAME **********

**000108* SEARS TOMATO AND POTATO DUST

**000235* GENERAL PURPOSE FUNGICIDE CONTAINS FORE

**000283* SEARS GARDEN DUST

**** PRODUCT SEARCH LISTING **** PAGE 15

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 000554	AGSCO INC BOX 458 GRAND FORKS ND 58201

**** PRODUCT NAME ****

**00072* AGSCO DUSTRET A POTATO SEED PIECE TREATMENT

**00086* BLITEX DUST DM-6

**00105* BLITEX 40 MN FUNGICIDE

**00106* BLITEX 80 MN FUNGICIDE

**00108* DUSTRET-A

**00109* AGSCO DB-GREEN-A

**00111* BLITEX DUST M-6

**00113* AGSCO DB-YELLOW

**00115* DUSTRET-II

**00127* AGSCO DB-GREEN A SEED DISINFECTANT AND INSECTICIDE

**00128* AGSCO DB-YELLOW A SEED DISINFECTANT

REGISTRANT	*NAME AND ADDRESS*
* 000557	SWIFT AGRICULTURAL CHEMICAL CORP. 111 WEST JACKSON BOULEVARD CHICAGO, IL 60604

**** PRODUCT NAME ****

**01586* SWIFT'S TOMATO DUST

**01826* VIGORO GARDEN DUST

**** PRODUCT SEARCH LISTING **** PAGE 16

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 000572	ROCKLAND CHEMICAL CO. INC. P.O. BOX 809 CALDWELL, NJ 07006

**** PRODUCT NAME ****

**00127* ROCKLAND "HOMEOWNER" GARDEN DUST

**00248* ROCKLAND ZINEB GARDEN FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 000595	HAVILAND AGRICULTURAL CHEMICAL CO 1845 STERLING NW GRAND RAPIDS, MI 49502

**** PRODUCT NAME ****

**00180* HAVILAND 7 M DUST

**00225* HAVILAND ZINEB DUST NO. 6

**00238* MALATHION MANEB COPPER DUST NO. 5-3.5-3.5

**00239* METHOXYCHLOR MANEB NO. 57

**00240* MALATHION MANEB DUST NO. 57

**00245* PARATHION MANEB DUST NO. 17

**00256* PARATHION MANEB DUST NO. 27

**00257* PARATHION COPPER MANEB 1-3.5-3.5

**00274* THIODAN ZINEB DUST

**00275* THIODAN MANEB DUST

**00277* DIAZINON COPPER MANEB DUST

**CONTINUE REGISTRANT 000595

**000283* MALATHION COPPER MANEB DUST NO. 5-7-3.5

**000285* DIAZINON MANEB DUST NO. 27

**000286* COPPER MANEB FUNGICIDE DUST NO. 3535

**000291* PARATHION COPPER MANEB DUST 2-3.5-3.5

**000297* MAYLAND POTATO SEED-PIECE FUNGICIDE DUST

**000318* 15% ZINEB DUST

REGISTRANT *NAME AND ADDRESS*

* 000602 RALSTON PURINA COMPANY
CHECKERBOARD SQUARE
ST LOUIS MO 63188

********** PRODUCT NAME **********

**000150* PURINA TOMATO AND GARDEN DUST

**000155* PURINA ROSE & FLOWER GARDEN SPRAY A W P FOR CNTR OF INS & PLANT DI

**000211* PURINA CAP-ZIN FUNGICIDE

**000231* PURINA ROSE AND FLOWER DUST

REGISTRANT *NAME AND ADDRESS*

* 000635 E-Z FLO CHEMICAL CO.
DIV. OF GROWER SERVICE CORP.
P.O. BOX 608
LANSING, MI 48901

********** PRODUCT NAME **********

**000044* E-Z FLO DITHANE 6 DUST

**CONTINUE REGISTRANT 000635

**000112* E-Z-FLO VEGA GUARD

**000129* MANEB 7 DUST

**000167* E-Z-FLO SPECIAL MUSHROOM DUST (FOR MUSHROOM HOUSES)

**000281* E-Z FLO 75-W ZINEB

**000324* SPECIAL GREENHOUSE TOMATO DUST

**000360* E-Z-FLO MANEB-SEVIN 6-3 DUST

**000388* PARATHION, MANEB, COPPER 1.5-3.8-4.5 DUST

**000390* TOBACCO FORMULA 1-3-10

**000394* TOBACCO FORMULA 1-3-20

**000421* TOBACCO FORMULA 1% PARATHION-10(T) DITHANE DUST

**000472* E-Z-FLO 1% PARATHION - 10% DITHANE DUST

**000496* TOBACCO FORMULA 1% PARATHION 20 DITHANE DUST

**000543* E-Z-FLO MANEB PARATHION 7-2 DUST

**000598* E Z FLO TOBACCO FORMULA 1% PARATHION 6.5% ZINEB DUST

**000600* E Z FLO DITHANE M-45 POTATO SEED PIECE FUNGICIDE DUST

**000603* E-Z-FLO TOBACCO FORMULA 1% PARATHION 3% THIODAN AND 6.5% ZINEB DUST

**000611* E Z FLO TOBACCO FORMULA 2% PARATHION 4% THIODAN 6.5% ZINEB

**000627* E-Z FLO POLYRAM 5 BORON DUST (WITH BORAX)

REGISTRANT *NAME AND ADDRESS*

* 000707 ROHM & HAAS COMPANY
INDEPENDENCE MALL
PHILADELPHIA PA 19105

********** PRODUCT NAME **********

**** PRODUCT SEARCH LISTING **** PAGE 19

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 000707

**000002* DITHANE Z-78

**000003* DITHANE D-14 PLANT FUNGICIDE

**000048* DITHANE M-22

**000070* DITHANE A-40

**000072* DITHANE Z-78 CONCENTRATE

**000078* DITHANE M-45 AGRICULTURAL FUNGICIDE

**000083* DITHANE M-22 SPECIAL

**000087* FORE A FUNGICIDE FOR TURF AND ORNAMENTALS

**000093* DIKAP-FUNGICIDE-MITICIDE

**000097* DITHANE M-45 SEED PROTECTANT CONCENTRATE AGRICULTURAL FUNGICIDE

**000101* DITHANE (R) M-22 SPECIAL W/ZINC CONC. FOR DUST BLEND. & FORM. ONLY

**000102* DITHANE(R) M-45 CONC. FOR DUST BLENDING AND FORMULATING ONLY

**000103* DITHANE M-22 CONCENTRATE (FOR DUST BLENDING AND FORMULATING ONLY)

**000124* DITHANE S-31 AGRICULTURAL FUNGICIDE

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REGISTRANT *NAME AND ADDRESS*

* 000728 PEARSON & COMPANY
PO BOX 7151
MOBILE AL 36601

********** PRODUCT NAME **********

**000016* PEARSON'S ZEBRA DUST

**000086* PEARSONS ROSE DUST

**000098* PEARSONS TOMATO DUST

**** PRODUCT SEARCH LISTING **** PAGE 20

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

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REGISTRANT *NAME AND ADDRESS*

* 000746 MFA OIL CO
P.O. BOX 519
COLUMBIA MO 65201

********** PRODUCT NAME **********

**000048* M.F.A. TOMATO DUST

**000078* NEW M.F.A. MULTI SPRAY BULK PACK WETTABLE POWDER FORMULA B

**000110* M.F.A. ROSE AND FIGRAL DUST

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REGISTRANT *NAME AND ADDRESS*

* 000769 WOOLFOLK CHEMICAL WORKS INC
PO BOX 938
FT VALLEY GA 31030

********** PRODUCT NAME **********

**000106* SECURITY BRAND ZINEB DUST

**000265* SECURITY VEGE-C-GARD

**000299* ROSE . FLOWER CHEMICAL DUST

**000342* SECURITY 6% MANEB DUST

**000366* SECURITY 5% POLYRAM PEANUT DUST

**000367* SECURITY POLYRAM-SEVIN 5-5 PEANUT DUST

**000385* SECURITY DITHANE M-45 SEVIN 6-5 PEANUT DUST

**000388* SECURITY 6% DITHANE M-45 DUST

**000430* SEC. TOM. & VEG. CONT. SEVIN & MANEB/INST. & DISEASE CONTROL

REGISTRANT	*NAME AND ADDRESS*
* 000779	FAESY & BESTHOFF INC 143 RIVER RD EDGEWATER NJ 07020

********** PRODUCT NAME **********

**000068* F & B LAWN AND TURF FUNGICIDE

**000078* F & B MANEB 8% DUST WITH ZINC

REGISTRANT	*NAME AND ADDRESS*
* 000802	LILLY CHAS H COMPANY MILLER RD DIV 7737 N.E. KILLINGSWORTH PORTLAND, OR 97218

********** PRODUCT NAME **********

**000266* MILLER'S DITHANE M22 6D

**000403* ZINEB 6D

**000428* MILLER'S 10% DITHANE M-45 DUST

**000437* MILLER'S 7.5% DITHANE M-45 DUST

**000457* MILLER'S DITHANE S-31

**000474* MILLER'S VEGETABLE DUST

REGISTRANT	*NAME AND ADDRESS*
* 000829	SOUTHERN AGRI INSECT INC PO BOX 218 PALMETTO FL 33561

********** PRODUCT NAME **********

**000067* SA BRAND 5C MANEB DUST

**000073* SA-5C BRAND MANZATE DUST WITH 1% PARATHION

**000115* SA-5C BRAND ZINEB C FUNGICIDE

**000180* SA-5C BRAND MANEB SPRAY CONCENTRATE

**000147* SA-5C BRAND 5% MANEB 5% SEVIN TOMATO & POTATO DUST

**000193* SA-5C BRAND 8% MANEB DUST

**000194* SA-5C BRAND SEVIN 5% DUST MANEB 5.6% SULFUR 70%

**000195* SA-5C BRAND POLE BEAN SPECIAL

**000228* SA-5C BRAND DITHANE M-45

**000227* SA 5C HOME AND GARDEN VEGETABLE DUST

**000231* SA5C CUCUMBER SQUASH & MELON DUST

REGISTRANT	*NAME AND ADDRESS*
* 000842	ROBINS G S COMPANY 126 CHOUTEAU AVE ST LOUIS MO 63102

********** PRODUCT NAME **********

**000109* ROBINS COMBINATION FRUIT SPRAY

**** PRODUCT SEARCH LISTING **** PAGE 23

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 000869	GREEN LIGHT COMPANY P. O. BOX 17985 SAN ANTONIO, TX 78217

********** PRODUCT NAME **********

000084 GREEN LIGHT GENERAL PURPOSE FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 000904	PRATT B G DIV GABRIEL CHEM LTD 204 21ST AVE PATERSON NJ 07905

********** PRODUCT NAME **********

**001151* PRATT'S LAWN & GARDEN FUNGICIDE

**001190* LIQUID MANEB PLANT FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 000909	COOKE LABORATORY PRODUCTS 4759 S DURFEE AVE PICO RIVERA CA 90660

********** PRODUCT NAME **********

**000064* COOKE ROSE DUST

**** PRODUCT SEARCH LISTING **** PAGE 24

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT	*NAME AND ADDRESS*
* 000961	LEBANON CHEMICAL CORPORATION PO BOX 180 LEBANON PA 17042

********** PRODUCT NAME **********

**000143* LEBANON GARDEN DUST INSECTICIDE FUNGICIDE

**000253* LEBANON TOMATO & POTATO DUST

**000257* LEBANON ROSE & FLORAL SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 001159	SEACOAST LABORATORIES INC 257 HIGHWAY 18 E BRUNSWICK NJ 08816

********** PRODUCT NAME **********

**001151* TWIN LIGHT ZINEB 75% WETTABLE

**001177* TWIN LIGHT TOMATO AND VEGETABLE DUST OR SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 001202	PUREGRO COMPANY 1052 W 6TH ST LOS ANGELES CA 90017

********** PRODUCT NAME **********

**001177* PUREGRO POLYRAP POTATO SEED TREATMENT

**001191* PUREGRO M-45 DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 001202

**000200* MANEB 5-6 DUST

**000256* PUREGRO DITHANE M 45 POTATO SEED-PIECE TREATER

**000257* PUREGRO MANZATE 200 POTATO SEED-PIECE TREATER

**000280* PUREGRO DIAZINON MANEB DUST 3-4

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REGISTRANT *NAME AND ADDRESS*

* 001258 OLIN CHEMICALS
OLIN CORPORATION
120 LONG RIDGE ROAD
STAMFORD, CT 06904

********** PRODUCT NAME **********

**000802* OLIN SPERLOX-Z INSTANTLY DISPERSIBLE FUNGICIDE

**000803* SPERLOX-SZ INSTANTLY DISPERSIBLE POWDER FOLIAR FUNG.

**000912* OLIN SPERLOX-Z INSTANTLY DISPER POWDER LAWN & GARDEN FOLIAR FUNG

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REGISTRANT *NAME AND ADDRESS*

* 001304 PURST MCNESS COMPANY
120 E CLARK ST
FREEPORT IL 61032

********** PRODUCT NAME **********

**000661* MCNESS GARDEN DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

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REGISTRANT *NAME AND ADDRESS*

* 001339 COTTON STATES CHEM CO INC
P O DRAWER 157
W MONROE LA 71291

********** PRODUCT NAME **********

**000151* COTTON STATES SEVIN SUPER TOMATO DUST

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REGISTRANT *NAME AND ADDRESS*

* 001345 STAPLES C W INC
BOX 328
PRESQUE ISLE ME 04769

********** PRODUCT NAME **********

**000010* STAPLES DITHANE SEED TREATING DUST (CONTAINS DITHANE M-45)

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REGISTRANT *NAME AND ADDRESS*

* 001386 UNIVERSAL COOPERATIVES INC
PO BOX 836
ALLIANCE OH 44601

********** PRODUCT NAME **********

**000073* UNICO ROSE AND FLORAL SPRAY POWDER

**000075* UNICO GARDEN SPRAY POWDER

**000316* UNICO GARDEN DUST

**000323* UNICO ROSE AND FLORAL DUST

**000427* UNICO 5.6% MANEB DUST

**CONTINUE REGISTRANT 001386

**000486* UNICO GARDEN DUST A

**000509* UNICO Z DUST CONTAINS 5.2% ZINEB FUNGICIDE

**000511* UNICO SEVIN ZINEB 3-5.2 DUST

**000512* UNICO MZ 5-5.2 DUST

**000517* UNICO GARDEN FUNGICIDE (ZINEB FUNGICIDE)

**000561* UNICO ROSE AND FLORAL SPRAY POWDER NO. 2

**000562* UNICO ROSE AND FLORAL DUST NO 2

REGISTRANT *NAME AND ADDRESS*

* 001039 BLUE SPRUCE COMPANY
1390 VALLEY ROAD
STIRLING, NJ 07980

********** PRODUCT NAME **********

**000140* CHEM O BAM 48 SOLUTION

**000154* CHEM NEB AGRICULTURAL FUNGICIDE

**000232* CHEM-SECT FRAMI CHEM NEB AGRICULTURAL FUNGICIDE

**000237* CHEM ZINEB

REGISTRANT *NAME AND ADDRESS*

* 001071 FLANCO PRODUCTS DIVISION ELI LILLY
RALPH HILL PO BOX 1750
INDIANAPOLIS IN 46206

********** PRODUCT NAME **********

**CONTINUE REGISTRANT 001471

**000048* GREENFIELD PIPPEN ROSE AND ORNAMENTAL DISEASE CONTROL

REGISTRANT *NAME AND ADDRESS*

* 001526 A G CHEM-CHEM DIST
ARIZONA AGROCHEMICAL CO.
P.O. BOX 21537
PHOENIX AZ 85036

********** PRODUCT NAME **********

**000373* PHOENIX BRAND ZINEB 5

**000410* PHOENIX BRAND PARATHION 2 MANEB 5

**000440* PHOENIX BRAND PARATHION 2 MANEB 5 WITH 50% SULPHUR

**000502* ZM 8% FUNGICIDE DUST

REGISTRANT *NAME AND ADDRESS*

* 001598 FCX INC
P O BOX 2419
RALEIGH, NC 27602

********** PRODUCT NAME **********

**000048* FCX 6 1/2% ZINEB 1% PARATHION DUST

**000091* 6.5% ZINEB DUST

**000160* FCX POLYPAM 3.5 "DP"

**000173* FCX FARM CHEM. POLYPAM 5 DUST/(BORAX) FUNGICIDE NUTRI.

**000196* FCX SEVIN ZINEB 3-5.2 DUST

**000211* FCX ROSE AND FLORAL DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 001677 ECONOMICS LABORATORY INC
SUPERV REG SERVICES
OSBORN BLDG
ST PAUL, MN 55102

********** PRODUCT NAME **********

**000032* MAGNACIDE 16

REGISTRANT *NAME AND ADDRESS*

* 001685 STATE CHEMICAL MFG CO THE
3100 HAMILTON AVE
44114

********** PRODUCT NAME **********

**000065* FORMULA 289 FUNGICIDE KURE

REGISTRANT *NAME AND ADDRESS*

* 001706 NALCO CHEMICALS COMPANY
REGULATORY AFFAIRS CONSULTANT
2901 BUTTERFIELD ROAD
OAK BROOK, IL 60521

********** PRODUCT NAME **********

**000100* NALCO 247 SUCROSE UTILIZING MICROORGANISM CONTROL CHEMICAL

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 001757 DREW CHEMICAL CORPORATION
P O BOX 248 701 JEFFERSON ROAD
PARSIPPANY, NJ 07054

********** PRODUCT NAME **********

**000025* BIOCIDE 207

**000036* BIOCIDE 275

**000042* DREWSPERSE 780 (FOR INDUSTRIAL USE ONLY)

**000048* AMERSPERSE 280

**000051* BIOSPERSE (P) 280

**000059* AMERSTAT 272

**000061* AMERSTAT 274

REGISTRANT *NAME AND ADDRESS*

* 001768 NATIONAL CHEMSEARCH DIV
USACHEM INC
2727 CHEMSEARCH BLVD
IRVING TX 75060

********** PRODUCT NAME **********

**000190* NATIONAL CHEMSEARCH WINTHINE FUNGICIDE-INSECTICIDE FOR TURF & ORNAMENT

REGISTRANT *NAME AND ADDRESS*

* 001772 HOLDEN CORP THE
1421 FIFTH AVE
HUNTINGTON WV 25702

********** PRODUCT NAME **********

**00055* CABELL'S 11 DUST CONTAINS SEVIN & ZINEB

**00074* CHEMFORM DPANC ZINEB SPRAY POWDER FUNGICIDE

REGISTRANT *NAME AND ADDRESS*

* 001812 GRIFFIN CORP.
P.O. BOX 1847
VALDOSTA, GA 31601

********** PRODUCT NAME **********

**00016* DITHANE Z-78 10

**00036* MANEB 8

**00080* POLYRAM 35 RED DUST

**00082* PEE GEE PHOSDRIN EMULSIFIABLE CONCENTRATE

**00111* 5-5 POLYRAM-SEVIN A COMBINATION FUNGICIDE & INSECTICIDE

**00125* PEE GEE POLYRAM 3.5 WITH SULPHUR FUNGICIDE

**00126* PEE GEE POLYRAM 5 DUST FUNGICIDE

**00147* PEE GEE ZINEB-SEVIN TOMATO DUST

**00152* PEE GEE ZINEB 75 W

**00172* SHADE TOBACCO DUST PARATHION 2 - THIODAN 4 - ZINEB 6.5

**00173* SHADE TOBACCO DUST PARATHION 1 THIODAN 3 - ZINEB 6.5

**CONTINUE REGISTRANT 001812

**00173* SHADE TOBACCO DUST PARATHION 2 THIODAN 3 - ZINEB 13

**00174* ZINEB 6.5 SHADE TOBACCO DUST

**00175* ZINEB 13 SHADE TOBACCO DUST

**00176* SHADE TOBACCO DUST PARATHION 1 - THIODAN 4 ZINEB 6.5

**00177* SHADE TOBACCO DUST PARATHION 1 - THIODAN 4 - ZINEB 13

**00178* SHADE TOBACCO DUST PARATHION 2-THIODAN 4-ZINEB 13

**00182* PEAS & TOBACCO DUST PARATHION 2 ZINEB 6.5

**00188* MAN-CAP

REGISTRANT *NAME AND ADDRESS*

* 001842 TRIANGLE CHEMICAL COMPANY
BOX 4528
MACON GA 31208

********** PRODUCT NAME **********

**00166* 1-6 PARATHION-ZINEB MILCH DUST

**00238* TRIANGLE POLYRAM 5 DUST FUNGICIDE

**00240* TRIANGLE POLYRAM 5 SEVIN 5 DUST FUNGICIDE INSECTICIDE

**00249* TRIANGLE POLYRAM 5 DUST FUNGICIDE-NUTRITIONAL WITH BORAX

**00254* TRIANGLE POLYRAM 5 SEVIN 7 1/2 DUST

REGISTRANT	*NAME AND ADDRESS*
* 001965	VANDERBILT R T COMPANY INC 33 WINFIELD ST EAST NORWALK CT 06855

********** PRODUCT NAME **********

**000066* VANCIDE MANEB FLOWABLE 37% MANEB DISPERSION

REGISTRANT	*NAME AND ADDRESS*
* 002124	GRACE W R & COMPANY AGR CHEM C H TIDWELL PO BOX 277 100 N MAIN ST MEMPHIS TN 38101

********** PRODUCT NAME **********

**000010* MACO ZINEB DUST

**000308* MACO MANEB 4-8 DUST

**000368* MACO SEVIN-MANEB 5-6 DUST

**000518* MACO ZINEB 75% WETTABLE POWDER

**000599* MACO LINDANE-MANEB-SULPHUR DUST SQUASH SPECIAL

**000601* MACO POTATO SEED PIECE FUNGICIDE DUST

**000604* MACO LINDANE MANEB DUST (CUCUMBER SPECIAL)

**000628* SEVIN-MANEB 5-4.8 DUST

**000646* MACO PARATHION-MANEB 2-4.8 DUST

**002781* MACO MANEB 80 FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 002125	SCIENCE PRODUCTS COMPANY INC 5801 N TRIPP AVE CHICAGO, IL 60646

********** PRODUCT NAME **********

**000043* SCIENCE FORE (LAWN & ORNAMENTAL FUNGICIDE)

**000050* SCIENCE MANEB GARDEN FUNGICIDE

**000060* SCIENCE ZINEB GARDEN FUNGICIDE

**000069* SCIENCE TOBATOR & VEGETABLE DUST

REGISTRANT	*NAME AND ADDRESS*
* 002136	HOFFMAN COMPANY INC 1413-1415 COURT ST LAB ALLENTOWN PA 18102

********** PRODUCT NAME **********

**000021* HOFFMAN S INSECTICIDE-FUNGICIDE DUST

REGISTRANT	*NAME AND ADDRESS*
* 002169	PATTERSON CHEMICAL COMPANY INC 1400 UNION AVE KANSAS CITY, MO 64101

********** PRODUCT NAME **********

**000045* PATTERSON'S FUNGICIDE MULTI-PURPOSE

**000090* PATTERSON'S GARDEN DUST

**** PRODUCT SEARCH LISTING **** PAGE 35

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 002169

**000114* PATTERSON'S ROSE DUST

**000160* PATTERSON'S ZINEB FUNGICIDE

**000161* PATTERSON'S MANEB FUNGICIDE

**000205* PATTERSON'S TOMATO DUST INSECTICIDE FUNGICIDE

**000208* PATTERSON S SCI WEEWORM GRANULES WITH TURF FUNGICIDE

****

REGISTRANT *NAME AND ADDRESS*

* 002204 PROCESS CHEMICAL DIV
P O BOX 2386R
MORRISTOWN, NJ 07960

********** PRODUCT NAME **********

**000004* NOFCOCIDE 110

****

REGISTRANT *NAME AND ADDRESS*

* 002217 PBI-GORDON CORPORATION
300 SC 3RD ST
KANSAS CITY KS 66118

********** PRODUCT NAME **********

**000401* TOMATO & GARDEN DUST

**000426* FORE LAWN & ORNAMENTAL SPRAY

**000514* FORE PLUS ROSE AND ORNAMENTAL FUNGICIDE

**000534* RES-Q

**000546* TOMATO AND VEGETABLE FUNGICIDE

**** PRODUCT SEARCH LISTING **** PAGE 36

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 002217

**000562* DUAL-PURPOSE RES-Q

**000564* RES-Q-100 SEED DISINFECTANT AND PROTECTANT DUST OR SLURRY

**000565* RES-Q-200 SEED DISINFECTANT AND PROTECTANT DUST OR SLURRY

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REGISTRANT *NAME AND ADDRESS*

* 002269 GOLD DUST INC
PO BOX 2210
ATLANTA GA 30301

********** PRODUCT NAME **********

**000149* TOMATO DUST

**000150* ZINEB DUST NO 10

**000153* ONE SHOT Z-P DUST

****

REGISTRANT *NAME AND ADDRESS*

* 002342 KERR-MCGEE CHEMICAL CORP
MGR REG & LABELING
KERR-MCGEE CENTER
OKLAHOMA CITY OK 73102

********** PRODUCT NAME **********

**000067* PASCO ZINEB DUST -6 1/2 PROD. NO. 602

**000448* PASCO PARA-BANDTE DUST 2-6 PROD NO 926

**000659* PASCO P-D-Q SHADE PARA THIODAN ZINEB DUST 1-3-13

**000662* PASCO P-D-Q-SHADE PARA THIODAN ZINEB DUST 1-3-6 1/2

**000716* PASCO ZINEB 75 WP

FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 002342

**00729* FASCO POLYRAM F BORON DUST 5-2.4
**00730* FASCO POLYRAM-SEVIN DUST 5-5
**00731* FASCO POLYRAM DUST-5
**00745* FASCO THIODAN ZINEB DUST 3-6
**00747* FASCO VEGETABLE DUST 5-6
**00762* GRO-TONE ROSE FUNGICIDE
**00768* GRO-TONE GARDEN DUST
**00772* GRO-TONE ZINEB FUNGICIDE
**00813* TOBACCO FORMULA 19.5% ZINEB
**00853* MANEB THIODAN DUST
**00858* 5.6% MANEB-3% METHOXYCHLOR DUST
**00863* TOBACCO FORMULA 16.25% ZINEB 5% SEVIN - 4% MALATHION
**00877* 5.6% MANEB DUST
**00883* POLYRAM SEED TREATES FOR POTATOES
**00886* POTATO SEED-PIECE FUNGICIDE DUST (CONTAINS DITHANE M-45)

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REGISTRANT *NAME AND ADDRESS*

* 002393 HOPKINS AGRI, CHEMICAL CO.
P.O. BOX 7532
MADISON, WI 53707

********** PRODUCT NAME **********

**00196* HOPKINS POLYRAM POTATO SEED TREATER
**00197* HOPKINS POTATO SEED-PIECE FUNGICIDE DUST (CONTAINS DITHANE M-45)
**00215* HOPKINS MANEB THIRAM SEED PROTECTANT

FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 002393

**00226* HOPKINS 6% DITHANE 278 DUST
**00238* HOPKINS 15% ZINEB DUST
**00244* HOPKINS POTATO-TOMATO DUST
**00318* MANEB WETTABLE POWDER FUNGICIDE
**00325* ZINEB WETTABLE POWDER FUNGICIDE

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REGISTRANT *NAME AND ADDRESS*

* 002459 STEVENS IND INC
N MAIN ST PO BOX 272
DAWSON GA 31742

********** PRODUCT NAME **********

**00103* MASTER BRAND M-22 DUST
**00191* MASTER BRAND ZINEB TOMATO DUST
**00208* MASTER BRAND 6% DITHANE M-45 DUST A FUNGICIDE DUST
**00216* MASTER BRAND DITHANE M-45 SEVIN 6-5 DUST
**00224* MASTER BRAND VEGETABLE GUARD DUST MALATHION & DITHANE M-45
**00243* MASTER BRAND 37.5 CAPTAN - 37.5 MANEB PEANUT SEED FUNGICIDE
**00247* MASTER BRAND TOMATO DUST 2
**00251* MASTER BRAND VEGETABLE DUST MALATHION & DITHANE M-45

**** PRODUCT SEARCH LISTING **** PAGE 39

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 002749 ACETO CHEMICAL COMPANY INC
126-02 NORTHERN BLVD
FLUSHING NY 11368

********** PRODUCT NAME **********

**00006* ZINEB 75
**00013* ZINEB 90
**00017* MANEB 80
**00018* MANEB 90
**00020* ZINEB 85%
**00022* MANEB 80-W
**00034* MANEB 80 PLUS 2% ZINC
**00036* AMAZIN ZINC ENRICHED MANEB 80W FUNGICIDE WITH 2% ZINC
**00064* BIRDIE A FUNGICIDE FOR TURF & ORNAMENTALS
**00068* ZINEB 90
**00076* ZINEB 75-W
**00088* ACETO AMAZIN PHASE 2
**00112* PURAM 80W
**00201* MANEB 80W WITH ADDED ZINC TURF FUNGICIDE
**00210* AMAZIN
**00222* MANEB 8 DUST POTATO SEED TREATER FUNGICIDE
**00227* MANEB 80W WITH 2% ZINC
**00265* DUO M-L INSECTICIDE & FUNGICIDE SEED TREATMENT

**** PRODUCT SEARCH LISTING **** PAGE 40

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 002935 WILBUR ELLIS CO.
P. O. BOX 1286
FRESNO, CA 93715

********** PRODUCT NAME **********

**00336* RED-TOP MANEB 6 DUST
**00354* RED TOP POTATO SEED PIECE FUNGICIDE DUST (CONTAINS DITHANE M-45)
**00378* RED-TOP POTATO FUNGICIDE "MANZATE" D-S

REGISTRANT *NAME AND ADDRESS*

* 003122 SUPERIOR FERTILIZER & CHEM COMPANY ATTEN R BASS
BOX 1021
TAMPA FL 33600

********** PRODUCT NAME **********

**00019* ZINEB 6-1/2% DUST

REGISTRANT *NAME AND ADDRESS*

* 003238 AGRICO CHEMICAL CO.
CROP PROTICTION CHEMICAL DIV.
BOX 3451
TULSA, OK 74101

********** PRODUCT NAME **********

**00073* MICRO-FLO SULPHUR-ZINEB FUNGI-SPERSE
**00075* ZINEB 75 WETTABLE

REGISTRANT	*NAME AND ADDRESS*
* 003342	CAPE FEAR CHEMICALS INC PO BOX 695 ELIZABETHTOWN NC 28337

********** PRODUCT NAME **********

**000112* TIGER BRAND 10% DITHANE DUST (ZINEB)

**000099* DITHANE-PARATHION DUST

REGISTRANT	*NAME AND ADDRESS*
* 003468	SCHALL CHEMICAL INC BOX 862 MONTEVISTA CO 81144

********** PRODUCT NAME **********

**000015* POLYRAM POTATO SEED TREATER

**000023* MANEB SULFUR

**000027* SEVIN MANEB SULFUR

**000030* POTATO SEED TREATER

**000031* CYTHION-MANEB-SULFUR

**000032* DRILL BOX SEED TREATMENT

**000034* PARATHION MANEB SULFUR

**000038* THIODAN MANEB SULFUR

**000050* ZINEB-SULFUR

REGISTRANT	*NAME AND ADDRESS*
* 003635	OXFORD CHEMICALS PO BOX 80202 ATLANTA GA 30341

********** PRODUCT NAME **********

**000110* OXFORD KOMTROL COOLING TOWER SLIMICIDE

REGISTRANT	*NAME AND ADDRESS*
* 003735	ARLENGE LABORATORIES 175 PEARL ST BROOKLYN NY 11201

********** PRODUCT NAME **********

**000013* ARLENGE ROSE COMBINATION SPRAY

**000021* ARLENGE ROSE COMBINATION SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 003783	SOUTHERN AGRICULTURAL CHEMICALS INC PO BOX 527 KINGSTREE SC 29556

********** PRODUCT NAME **********

**000138* ROYAL BRAND DITHANE PARATHION DUST

**000183* POLYRAM BED DUST

**000184* 101 BRAND MANEB TCHATC & TOBACCO SEED BED

**000186* ROYAL BRAND POLYRAM 3.5 DUST FUNGICIDE

**** PRODUCT SEARCH LISTING **** PAGE 43

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 003743

**00189* 101 BRAND FOR'S MIXTURE FOR POLE BEANS
**00191* ROYAL BRAND POLYRAM 3.5 DUST WITH PAPATHION
**00214* ROYAL BRAND ZINEB 75 W
**00254* POLE BEAN SPECIAL
**00257* SEVIN MANEB TOMATO & POTATO DUST
**00265* 10% DITHANE DUST FOR THE CONTROL OF TOBACCO BLUE MOLD
**00271* APPLE DUST NO. 5
**00279* SPECIAL GARDEN DUST
**00287* MANEB NO. 6 DUST
**00295* 2-6-20 CABBAGE DUST
**00296* MANEB DUST
**00336* ROYAL BRAND M-P 2-4 CABBAGE DUST
**00338* ROYAL BRAND TOMATOE & BEAN DUST
**00339* CUKE SPECIAL

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REGISTRANT *NAME AND ADDRESS*

* 003770 ECONOMY SPCE COMPANY
BOX 237
HOSPERS, IA 51238

********** PRODUCT NAME **********

**00136* ECONOMY'S APPLE CEDAR RUST SPRAY
**00172* FORE A FUNGICIDE FOR TURF AND ORNAMENTALS
**00197* MULTI-PURPOSE AGRICULTURAL FUNGICIDE
**00201* ECONOMY ZINC ENRICHED MANEB 80W FUNGICIDE WITH 2% ZINC

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 003770

**00213* ECONOMY POTATO DUST
**00225* GLADIOLUS AND BULB DUST
**00242* MULTI-PURPOSE BUG DUST
**00247* ROSE DUST
**00261* MULTI-PURPOSE BUG DUST
**00262* TOMATO DUST
**00270* CAPTAN-MANEB 10-35 SEED PROTECTANT
**00309* TOMATO DUST
**00313* ROSE AND FLORAL DUST

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REGISTRANT *NAME AND ADDRESS*

* 003772 MAY SEED & NURSERY CO
SHENANDOAH IA 51603

********** PRODUCT NAME **********

**00009* EARL MAY MULTI-PURPOSE BUG DUST
**00033* EARL MAY ZINEB 75W FUNGICIDE

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REGISTRANT *NAME AND ADDRESS*

* 003876 BETZ LABORATORIES, INC.
4636 SCHEETCH ROAD
TREVOSE, PA 19047

********** PRODUCT NAME **********

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 003876

**000053* BETZ SLIME-TROL FORMULA RX-34

**000060* BETZ SLIME-TROL RX-32A

**000062* BETZ SLIMICIDE C-34

REGISTRANT *NAME AND ADDRESS*

* 004985 SMITH-DOUGLASS DIV.
BORDEN CHEMICAL, BORDEN INC.
5100 VIRGINIA BEACH BLVD.
NORFOLK, VA 23501

********** PRODUCT NAME **********

**000332* SMITH DOUGLAS POLYRAM 5% DUST

**000335* SMITH-DOUGLASS POLYRAM-SEVIN 5-5 DUST

**000336* SMITH-DOUGLASS POLYRAM 7% DUST

**000347* SMITH DOUGLASS POLYRAM SEVIN SULFUR DUST FOR PEANUTS

**000384* SMITH-DOUGLASS DITHANE M-45 SEVIN 5-5 DUST

**000386* SMITH-DOUGLASS DITHANE M-45 5% DUST

**000400* SMITH DOUGLASS MANZATE 3% DUST

**000415* SMITH-DOUGLASS MANZATE 8% DUST

**000453* ZINEB-SEVIN 3.9-5 DUST

000497* SMITH-DOUGLASS DITHANE M-45*-SEVIN 5-10 DUST

**000505* MANEB-PARATHION DUST

**000506* MANEB 4% TOBACCO PLANT BED DUST

**000508* ZINEB PARATHION 3.9-1 DUST

**000511* ZINEB 6 1/2% DUST

**000512* DITHANE M-45 6% DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 004185

**000537* MANEB 1.4% TOBACCO PLANT BED DUST

REGISTRANT *NAME AND ADDRESS*

* 004255 PIKE CHEM INC
BOX 546
NITRO WV 25143

********** PRODUCT NAME **********

**000013* AMOBAM SOLUTION

REGISTRANT *NAME AND ADDRESS*

* 004581 PENNWALT CORP AGCHEM DIV.
PENNWALT TECHNOLOGICAL CENTER
P.O. BOX C
KING OF PRUSSIA, PA 19406

********** PRODUCT NAME **********

**000188* ZINEB W-75

**000217* TRICARBAMIX

**000255* MANEB 80

**000262* TRIMANZONE

**000267* ZINEB TECHNICAL

**000270* TRIZINEB

REGISTRANT	*NAME AND ADDRESS*
* 004683	DEARBORN CHEMICAL DIV-WR GRACE & COMPANY 320 GENESSEE ST LAKE JURICH IL 60047

********** PRODUCT NAME **********

**000228* DEARCIDE 744

REGISTRANT	*NAME AND ADDRESS*
* 004715	COLORADO INTERNATIONAL CORP 7800 MARBLE N.E. ALBUQUERQUE, N.M. 87110

********** PRODUCT NAME **********

**000282* BEST & SERVIS BRAND POLYRAM POTATO SEED TREATER NO. 7

REGISTRANT	*NAME AND ADDRESS*
* 004876	AG SUPPLY INC INDUSTRIAL DRIVE HOPKINSVILLE KY 42240

********** PRODUCT NAME **********

**000012* MANEB FUNGICIDE FOR PLANT DISEASE CONTROL

**000040* TOBACCO PLANT BED DUST

**000042* AGTRIPLE ACTION VEGETABLE DUST

REGISTRANT	*NAME AND ADDRESS*
* 004931	GOOD-LIFE CHEMICALS INC BOX 687 EFFINGHAM IL 62401

********** PRODUCT NAME **********

**000125* VEGETABLE AND TOMATO DUST OR SPRAY

**000128* GOODLIFE GARDEN SPRAY OR DUST

**000129* GOOD LIFE INSIGNIA ROSE & FRUIT SPRAY

**000133* GOOD LIFE TOMATO AND VEGETABLE DUST OR SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 005009	TRETOLITE DIV PETROLITE CORP ADM MANAGER-RESEARCH 369 MARSHALL AVENUE ST LOUIS, MO 63119

********** PRODUCT NAME **********

**000022* XCIDE-505

**000023* XCIDE-15

REGISTRANT	*NAME AND ADDRESS*
* 005238	HOCK SEED COMPANY 13TH & SPRINGHAM ST PITTSBURG PA 15230

********** PRODUCT NAME **********

**000015* HOCK'S CUPA-LAWN

REGISTRANT	*NAME AND ADDRESS*
* 005348	PATCO PRODUCTS INC DIV OF VAUGHAN'S SEED CO CHIMNEY ROCK ROAD BOUND BROOK, NJ 08805

********** PRODUCT NAME **********

**000008* PATCO'S LAWN MEDIC A LAWN AND GRASS FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 005481	AMVAC CHEMICAL CORP 4100 EAST WASHINGTON BLVD LOS ANGELES, CA 90023

********** PRODUCT NAME **********

**001141* DUPHAR DURATHION ZEEMATE TOXAPHENE DUST 2-6-15

REGISTRANT	*NAME AND ADDRESS*
* 005535	ADIKES INC J & L 182-12 93RD AVE JAMAICA NY 11423

********** PRODUCT NAME **********

**000043* GRO-WELL ZINEB

**000085* GRO-WELL TCHATC AND VEGETABLE DUST SQUEEZE DUSTER

**000086* GRO-WELL TCHATC & VEGETABLE DUST

REGISTRANT	*NAME AND ADDRESS*
* 005589	COASTAL CHEMICAL CORPORATION PO BOX 856 GREENVILLE MC 27834

********** PRODUCT NAME **********

**000006* DITHANE M-22 SPECIAL

**000052* DITHANE M-22 1% PARATHION DUST

REGISTRANT	*NAME AND ADDRESS*
* 005685	FARMINGDALE GARDEN LABS 136 VERDI ST FARMINGDALE NY 11735

********** PRODUCT NAME **********

**000098* FARMINGDALE LAWN AND GARDEN FUNGICIDE CONTAINING MANEB WITH ZINC

**000107* FARMINGDALE ROSE-FLORAL-TOMATO & VEGETABLE SPRAY

REGISTRANT	*NAME AND ADDRESS*
* 005797	CAROLINA CHEMICAL CORP PO BOX 70 WILSON NC 27893

********** PRODUCT NAME **********

**000072* CHAMPION DITHANE Z-78 DUST

REGISTRANT	*NAME AND ADDRESS*
* 005887	BLACK LEAF PROD COMPANY 667 N STATE ST ELGIN IL 60120

********** PRODUCT NAME **********	
**000013*	SHEEN FOLIAGE SPRAY
**000038*	BLACK LEAF MANEB FUNGICIDE
**000040*	BLACK LEAF TOMATO AND VEGETABLE DUST
**000052*	BLACK LEAF FORT LAWN FUNGICIDE

REGISTRANT	*NAME AND ADDRESS*
* 005905	HELENA CHEMICAL CO CLARK TOWER, 5100 POPLAR AVE, SUITE 2904 MEMPHIS TN 38137

********** PRODUCT NAME **********	
**000075*	ATLAS BRAND POLYRAM 10 DUST
**000076*	ATLAS BRAND POLYRAM 80 WETTABLE POWDER
**000301*	HELENA BRAND 1% PARATHION 6 1/2% ZINEB DUST
**000321*	HELENA BRAND TOBAC 6.5% ZINEB DUST

REGISTRANT	*NAME AND ADDRESS*
* 006720	SOUTHERN MILL CREEK PRODUCTS COMPANY INC BOX 1096 TAMPA FL 33601

********** PRODUCT NAME **********	
**000108*	X-CEL ZINEB

REGISTRANT	*NAME AND ADDRESS*
* 006735	TIDE PRODUCTS INC ATTN HW MARSH BOX 1020 EDINBURG TX 78539

********** PRODUCT NAME **********	
**000184*	TIDE SEVIN ZINEB 10-6.5
**000185*	TIDE DITHANE M-45 DUST
**000186*	TIDE ZINEB 75W
**000192*	TIDE ZINEB 6.5 DUST
**000202*	TIDE FUNGICIDE DUST

REGISTRANT	*NAME AND ADDRESS*
* 006874	DAWSON CHEMICAL COMPANY INC 1525 N POST OAK RD HOUSTON TX 77055

********** PRODUCT NAME **********	
**000002*	SPERLOX MANEB

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**CONTINUE REGISTRANT 006874

**000005* SPERLOX SZ

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REGISTRANT *NAME AND ADDRESS*

* 006993 GERMAINS INC
4820 E 50TH ST
LOS ANGELES CA 90058

********** PRODUCT NAME **********

**000037* GERMAIN'S IMPROVED MULTI-PURPOSE TOMATO & VEGETABLE DUST

**000038* GERMAIN'S ROSE & FLOWER DUST

****

REGISTRANT *NAME AND ADDRESS*

* 007001 OCCIDENTAL CHEMICAL CO
P O BOX 198
LATHROP, CA 95330

********** PRODUCT NAME **********

**000098* MANSUL

**000126* POLYRAM Z DUST

**000189* MULTI-PURPOSE DISEASE CONTROL CONTAINS DITHANE M-45

**000198* TOMATO & VEGETABLE DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

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REGISTRANT *NAME AND ADDRESS*

* 007173 CHEMPAR CHEMICAL COMPANY INC
260 MADISON AVE
NEW YORK NY 10016

********** PRODUCT NAME **********

**000082* CHEMPAR ZINEB TECHNICAL FOR MANUFACTURING PURPOSES ONLY

****

REGISTRANT *NAME AND ADDRESS*

* 007192 SIMPLOT BUILDERS
RED RIVER VALLEY DISTRICT
RED RIVER VALLEY DISTRICT BOX 590
EAST GRAND FORKS, MN 56721

********** PRODUCT NAME **********

**000064* VALLEY GRO POTATO SEED TREATER

**000148* NORTHLAND ELITE CUT

****

REGISTRANT *NAME AND ADDRESS*

* 007401 VOLUNTARY PURCHASING GROUP INC
PO BOX 460
BONHAM TX 75418

********** PRODUCT NAME **********

**000147* FERTI-LOME TOMATO AND VEGETABLE GARDEN DUST AND SPRAY

**000159* FERTI LOME TOMATO & VEGETABLE DUST

**000258* FERTI-LOME HOME GARDEN TOMATO & VEGETABLE DUST

REGISTRANT *NAME AND ADDRESS*

* 007779 HOUGHTON E F & CO
MADISON & VAN BUREN AVENUES
NORRISTOWN PA 19401

********** PRODUCT NAME **********

**000009* SLIMEX NO. 16

**000018* SLIMEX 4416

**000019* SLIMEX 5101

REGISTRANT *NAME AND ADDRESS*

* 007969 BASF WYANDOTTE CORPORATION
PO BOX 181 100 CHERRY HILL RD
PARSIPPANY NJ 07054

********** PRODUCT NAME **********

**000003* BASOFIX BM 117

**000004* BASF MANEB 80 - W. P.

**000005* BASF MANEB PLUS AGRICULTURAL FUNGICIDE

**000011* BASF MANEB TECHNICAL GRADE

**000012* BASF ZINEB TECHNICAL GRADE

**000018* BASF ZINEB 80 WP

REGISTRANT *NAME AND ADDRESS*

* 008103 CAVEDON CHEMICAL COMPANY INC
26 AVE C
WOONSOCKET RI 02895

********** PRODUCT NAME **********

**000002* CAVCO SB-7C SLIMICIDE FOR PAPER MILLS

REGISTRANT *NAME AND ADDRESS*

* 008203 ICI UNITED STATES INC.
REGULATORY LAW DEPT.
P.O. BOX 751
WILMINGTON, DE 19899

********** PRODUCT NAME **********

**000008* GRANOL M-8

**000009* GRANOX M-8 SEED DISINFECTANT

**000011* AGROSOL S SEED TREATMENT

**000012* GRANOL(R) P-C PEANUT SEED FUNGICIDE AND INSECTICIDE

**000013* GRANOX P-F-M PEANUT AND SOYBEAN SEED FUNGICIDE

**000022* GRANOX FLOWABLE FUNGICIDE SEED TREATMENT

REGISTRANT *NAME AND ADDRESS*

* 008222 LING FUANG INDUSTRIES, INC.
LING FUANG, IND.
P.O. BOX 1207
GARDNERVILLE, NV. 89410

********** PRODUCT NAME **********

**CONTINUE REGISTRANT 008222

**000037* T & C GARDEN FUNGICIDE

**000058* TOWN & COUNTRY TOMATO & VEGETABLE SQUEEZE DUSTER

REGISTRANT	*NAME AND ADDRESS*
* 008236	PROCHIMIE INTERNATIONAL INC. 488 MADISON AVE. NEW YORK, N.Y. 10022

********** PRODUCT NAME **********

**000003* ZINEB 93%

REGISTRANT	*NAME AND ADDRESS*
* 008343	GABRIEL CHEMICALS LTD 204 21ST AVE PATERSON, NJ 07509

********** PRODUCT NAME **********

**000076* ZINEB 15 MUSHROOM DUST

**000086* POTATO SEED TREATER A READY TO USE DUST CONTAINING DITHANE M-45

REGISTRANT	*NAME AND ADDRESS*
* 008521	GABRIEL CHEMICAL LTD BOX B ROBBINSVILLE NJ 08691

********** PRODUCT NAME **********

**CONTINUE REGISTRANT 008521

**000117* GABRIEL MANEB 80% WETTABLE POWDER

REGISTRANT	*NAME AND ADDRESS*
* 008540	GARRATT CALLAHAN COMPANY 111 ROLLINS RD MILLBRAE CA 94031

********** PRODUCT NAME **********

**000017* FORMULA 37 WATER TREATMENT MICROBIOCIDE

REGISTRANT	*NAME AND ADDRESS*
* 008590	AGWAY INC CHEMICAL DIV BOX 1333 SYRACUSE NY 13201

********** PRODUCT NAME **********

**000033* AGWAY MANEB-SEVIN 4.5-5 D

**000082* MANEB 4.5 D

**000164* MANEB-THIODAN 4.5-3 D

**000174* MANEB THIODAN 5.6-3 D

**000182* AGWAY DITHANE M-45 10 D

**000197* AGWAY MANEB-MALATHION 5.6-5D

**000202* POLYRAM 7 D

**000289* AGWAY POTATO SEED TREATMENT 8D

**000301* AGWAY DITHANE M-45 6D

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**CONTINUE REGISTRANT 008590

**009399* ZINEB 15D

**009409* ZINEB-METHOXYCHLOR-MALATHION 15-5-4 D

****

REGISTRANT *NAME AND ADDRESS*

* 008591 MOGUL CORPORATION THE
P. O. BOX 200
CHAGRIN FALLS, OH 44022

********** PRODUCT NAME **********

**009028* MOGUL AG-441

****

REGISTRANT *NAME AND ADDRESS*

* 009275 BERRIEN PRODUCTS COMPANY INC
BOX 355
NASHVILLE GA 31639

********** PRODUCT NAME **********

**009009* BERRIEN ZINEB DUST 6.5

****

REGISTRANT *NAME AND ADDRESS*

* 009307 ENCAP PRODUCTS COMPANY
P O BOX 278
MOUNT PROSPECT, IL 60056

********** PRODUCT NAME **********

**009004* POP-IN TOMATO & VEGETABLE SPRAY PACKETS

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 009307

**009011* POP-IN TOMATO AND VEGATABLE SPRAY

****

REGISTRANT *NAME AND ADDRESS*

* 009386 VININGS CHEM COMPANY
2555 CUMBERLAND PARKWAY STE 200
ATLANTA, GA 30339

********** PRODUCT NAME **********

**009007* AMA-31

**009011* AMA-30

****

REGISTRANT *NAME AND ADDRESS*

* 009404 CHASE & COMPANY
BOX 1697
SANFORD FI 32771

********** PRODUCT NAME **********

**009013* SUNNILAND FORE

**009019* SUNNILAND TOMATO AND VEGETABLE DUST

****

REGISTRANT *NAME AND ADDRESS*

* 009592 MACNAIR L E
15 FRANKLIN ST
HOULTON ME 04730

********** PRODUCT NAME **********

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 009592

**000003* 8% MANEB POTATO SEED TREATER

****

REGISTRANT *NAME AND ADDRESS*

* 009779 RIVERSIDE CHEM COMPANY
P.O. BOX 171199 855 RIDGE LAKE BLVD
MEMPHIS TN 38117

********** PRODUCT NAME **********

**000037* RIVERSIDE SEVIN ZINEB TOMATO DUST

**000085* RIVERSIDE MANEB 5 DUST FUNGICIDE

**000102* RIVERSIDE DITHANE M-45 DUST

**000114* RIVERSIDE DITHANE M-45 SEVIN 5 DUST

**000115* RIVERSIDE DITHANE M-45 SEVIN 10 DUST

**000194* RIVERSIDE MANEB 80

**000229* 10% DITHANE DUST

**000235* 7.8% ZINEB 10% SEVIN

****

REGISTRANT *NAME AND ADDRESS*

* 009782 WOODBURY CHEMICAL COMPANY
PO BOX 4819
PRINCETON FL 33030

********** PRODUCT NAME **********

**000034* POTATO SEED-PIECE FUNGICIDE DUST

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

****

REGISTRANT *NAME AND ADDRESS*

* 009932 MAATSCHAPPIJ N V CHEPARO
POSTBOX 6014
ROTTERDAM-N HOLLAND 00000

********** PRODUCT NAME **********

**000002* CHEPARO MV4 WETTABLE POWDER

**000003* MV-4 WETTABLE POWDER MANEB WITH ZINC OXIDE ADDED

****

REGISTRANT *NAME AND ADDRESS*

* 010226 ROCKWOOD CHEM COMPANY
BOX 34
BRAWLEY CA 92227

********** PRODUCT NAME **********

**000038* ROCKWOOD BRAND ZINEB DUST NO.6

**000048* ROCKWOOD CHEMICAL CO. ZINEB-CRYOLITE DUST NO. 6-50

****

REGISTRANT *NAME AND ADDRESS*

* 010329 BYCO INC
CONSHOHOCKEN PA 19428

********** PRODUCT NAME **********

**000001* BYCHEM 812-SLIMICIDE

**** PRODUCT SEARCH LISTING **** PAGE 63

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 010378 HODAG CHEMICAL CORP
7247 N CENTRAL PARK AVE
SKOKIE IL 60076

********** PRODUCT NAME **********

**00001* SANITROL MICROBIOCIDE

REGISTRANT *NAME AND ADDRESS*

* 010485 UNITED CHEMICAL CORPORATION OF NEW MEXICO
PO BOX 1499
HOBBS NM 88240

********** PRODUCT NAME **********

**00016* ALPHA 550

REGISTRANT *NAME AND ADDRESS*

* 010659 OCCIDENTAL CHEMICAL COMPANY
BOX 1185
HOUSTON TX 77001

********** PRODUCT NAME **********

**00026* OXY TREET 6%

**** PRODUCT SEARCH LISTING **** PAGE 64

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 010912 HAYNES CHEMICAL COMPANY
P.O. BOX 30
EAST GRAND FORKS, MN 56721

********** PRODUCT NAME **********

**00002* TRINOX

**00003* THIHEX

**00004* TRINOX POTATO SEED TREATER

REGISTRANT *NAME AND ADDRESS*

* 011544 MORGAN CHEMICALS INC
PO BOX 3002
GREAT FALLS MT 59401

********** PRODUCT NAME **********

**00001* HAYNES & MORGAN SEED TREAT DRILL BOX NO. 10

**00006* HAYNES & MORGAN SEED TREAT WIREWORM & SMUT #20

**00007* HAYNES & MORGAN SEED TREAT DRILL BOX & SLURRY #0

**00013* HAMBLIGHT

REGISTRANT *NAME AND ADDRESS*

* 011576 IND WATER CHEMICAL DIV OF CONSOL FOODS
314 SPEARS AVE
CHATTANOOGA TN 37405

********** PRODUCT NAME **********

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 011576

**000013* DDC-30

REGISTRANT *NAME AND ADDRESS*

* 011656 WESTERN FARM SERVICE INC SHELL CHEM COMPANY
1025 CONNECTICUT AVE-STE 200
WASH DC 20036

********** PRODUCT NAME **********

**000005* RUSSET 7% POLYRAM DUST (POLYRAM POTATO SEED TREATER) FUNGICIDE

**000006* RUSSET 7% FUNGICIDE DUST POTATO SEED-PIECE TREATER

REGISTRANT *NAME AND ADDRESS*

* 011682 SIMPLOT JR COMPANY MINERALS & CHEM DIV
BOX 810
MOUNTAIN HOME ID 83647

********** PRODUCT NAME **********

**000001* POLYRAM 7 POTATO SEED TREATER

**000015* P.S.T. 6 POTATO SEED TREATER

REGISTRANT *NAME AND ADDRESS*

* 014782 CARUSO FARM SUPPLY
120 E WHITE HORSE PIKE
HAMMONTON NJ 08037

********** PRODUCT NAME **********

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

**CONTINUE REGISTRANT 014782

**000003* 6% M-85 DUST

REGISTRANT *NAME AND ADDRESS*

* 018773 TURNEP SALES & SUPPLY INC
PO BOX 847
TIFTON GA 31794

********** PRODUCT NAME **********

**000001* PEANUT 7 TSP 5 SEED PROTECTANT

**000002* T-S-P 4 WAY FOR SEED DISEASE CONTROL

REGISTRANT *NAME AND ADDRESS*

* 019382 ALPHA RESEARCH CHEMICAL COMPANY
PO BOX 1502
GRAND FORKS ND 58201

********** PRODUCT NAME **********

**000001* SPUD DUST Z-8

**000002* SPUD DUST Z-8-S

**000006* ALPHA-G

**** PRODUCT SEARCH LISTING **** PAGE 67

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 031910 ALCO CHEMICAL CORP AN ALCO STANDARD COMPANY
TRENTON AVE & WILLIAM STS
PHILADELPHIA PA

********** PRODUCT NAME **********

**00001* AQUATREAT DNM-30

**00002* AQUATREAT DNM-30

REGISTRANT *NAME AND ADDRESS*

* 033561 HERCULES INC
ENVIRONMENTAL SERVICES DIV
910 MARKET ST
WILMINGTON, DE 19899

********** PRODUCT NAME **********

**00001* MB 123

REGISTRANT *NAME AND ADDRESS*

* 033576 OLIN WATER SERVICES
OLIN CORPORATION
120 LONG RIDGE RD
STAMFORD, CT 06904

********** PRODUCT NAME **********

**00031* OLIN 7060

**00034* OLIN 7061

**00036* OLIN 3302

**00037* OLIN 3312

**** PRODUCT SEARCH LISTING **** PAGE 68

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

REGISTRANT *NAME AND ADDRESS*

* 033772 PIONEER CHEMICAL WKS INC
PENNA RR & RTE 73
MAPLE SHADE, NJ 08052

********** PRODUCT NAME **********

**00001* PIOCIDE C-30

REGISTRANT *NAME AND ADDRESS*

* 033861 AGRI FUTURE COMPANY
15708 LOCE ROAD
BURNSVILLE, MN 55337

********** PRODUCT NAME **********

**00002* SOWMATIC I

REGISTRANT *NAME AND ADDRESS*

* 033955 ACME DIVISION
FBI GORDON CORP
300 SOUTH THIRD ST
KANSAS CITY, KS 66118

********** PRODUCT NAME **********

**00393* ACME ALL ROUND DUST

**00456* ACME TOMATO AND VEGETABLE DUST

**00469* ACME ZINEB 75W FUNGICIDE

**00511* ACME RED RIVER VEGETABLE SPRAY

07/28/77 FEDERALLY REGISTERED PRODUCTS CONTAINING EBCD

****

REGISTRANT *NAME AND ADDRESS*

* 034571 BETZ ENTEC INCORPORATED
2500 OFFICE CENTER
WILLOW GROVE, PA 19090

********** PRODUCT NAME **********

**00003* BETZ ENTEC 344

****

REGISTRANT *NAME AND ADDRESS*

* 034704 PLATTE CHEMICAL COMPANY
150 SOUTH MAIN
GREENWOOD, NE 06802

********** PRODUCT NAME **********

**00017* BALCOM POLYBAM POTATO SEED TREATER

**00029* CLEAN CROP M-45 8% POTATO SEED TREATER

**00037* CLEAN CROP M50-M10 SEED PROTECTANT FOR SMALL GRAINS

**00039* CLEAN CROP MANEB-LINDANE SEED PROTECTANT

****

REGISTRANT *NAME AND ADDRESS*

* 035909 ASSOCIATED WATER CONDITIONERS, INC.
RT. 202, MT. KEMBLE AVE.
MORRISTOWN, NJ 07960

********** PRODUCT NAME **********

**00001* MICROBIOCIDE 467

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